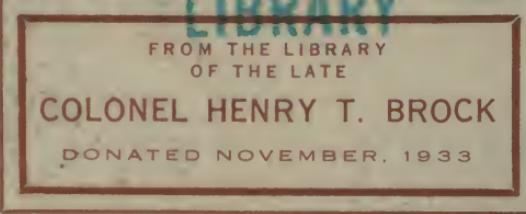
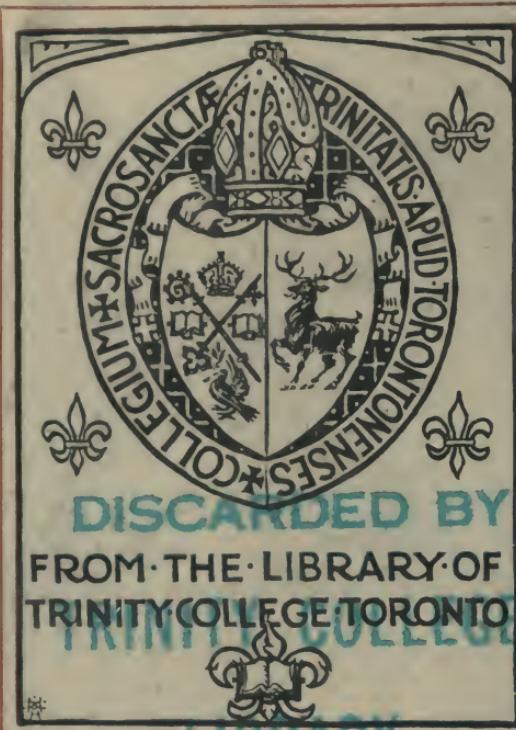




3 1761 03630 6413





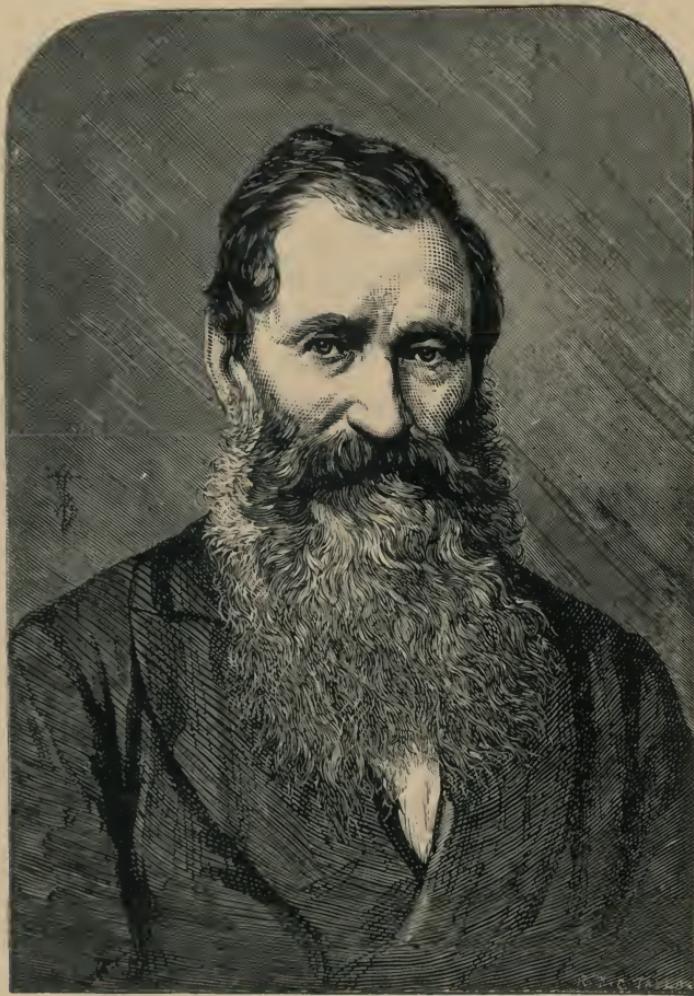


6/- 2 - 15

Henry Brock

Torquay

1899



MR. ISAAC HOLDEN.

FORTUNES MADE IN BUSINESS

A

SERIES OF ORIGINAL SKETCHES

Biographical and Anecdotic

FROM THE

RECENT HISTORY OF INDUSTRY AND COMMERCE

By VARIOUS WRITERS

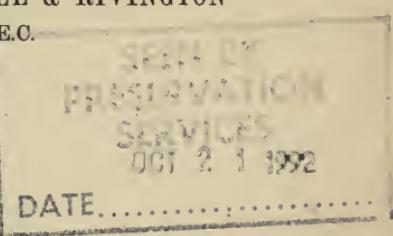
VOLUME I.

LONDON :

SAMPSON LOW, MARSTON, SEARLE & RIVINGTON
188, FLEET STREET, E.C.

1884

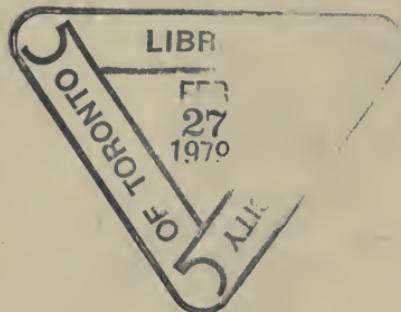
[All rights reserved.]



3265

FOR

I



PRINTED BY

KELLY AND CO., GATE STREET, LINCOLN'S INN FIELDS, W.C. ;
AND MIDDLE MILL, KINGSTON-ON-THAMES.

HF
3504
F7
V.I

33105

MAY 10 1934

P R E F A C E.

WHEN Aladdin rubbed his Wonderful Lamp (so we are told in the *Arabian Nights' Entertainments*) he summoned a powerful genie, who obeyed his every behest, and was able to lay at his feet all the good things which this world can command.

The old Eastern story was a sort of prophetic mirror of many romantic incidents in the Modern Biography of Industry and Commerce.

In Current Literature few things have a greater charm to busy men than any trustworthy record of successful enterprise, especially when the story bears upon yesterday or to-day. No wonder that it is so.

Now, perhaps, more than ever, calm, well-directed effort and scientific insight; indomitable pluck and that ready resolution which knows when to seize the moment of fortune—are the grand characteristics which give power to win a prize in the arena of modern competition.

To know something, therefore, of the men who have succeeded becomes of increasing interest to those in the thick of the fight at the present

moment. The lucky hit or the lost chance, the far-seen enterprise demanding years of quiet, patient labour and stern endurance,—are a kind of commercial history which carries its own lesson of elastic hope or sober caution to the eager men of to-day.

In such studies of character and energy we observe at work the ready wit which sees a new market, and the prompt resource which supplies it; the skilful utilisation of a waste product; the building up of new industrial colonies, as remarkable for their social as for their commercial advantages; the forging of links of connection between eminent business houses and the highest offices of state; the magic of mechanical power and inventive genius applied to the cheapening of some article of every-day consumption; the Art which casts a brightening fancy upon even the mean utensils of the poorest household. Above all, we can mark the influence of fidelity to engagements, and the sagacity and wise liberality which know when to foster a struggling industry.

All the forces, in short, which bend the powers of Nature and the rugged products of the Earth to the comfort and the grace of man's life are before us. We see them in full play amidst the small beginnings and the marvellous expansion of Com-

mercial Houses whose members have won wealth, social rank, and a world-wide reputation.

Some years ago the Editor of this Volume, in company with various writers, set about the task of which the result is here offered to the public.

The endeavour has been to take down from the lips of the living, facts not previously reduced to writing; and also to collect and crystallise the valuable material lying about in fugitive literature and out-of-the-way storehouses.

It has been no easy matter to gather and sift the curiously scattered information which thus gave the key to such varied efforts as those of the men represented in this Volume. Many visits had to be paid to different parts of the Country and numerous appeals made, in person and by letter, to those who were found to be the sole living depositaries of the knowledge desired.

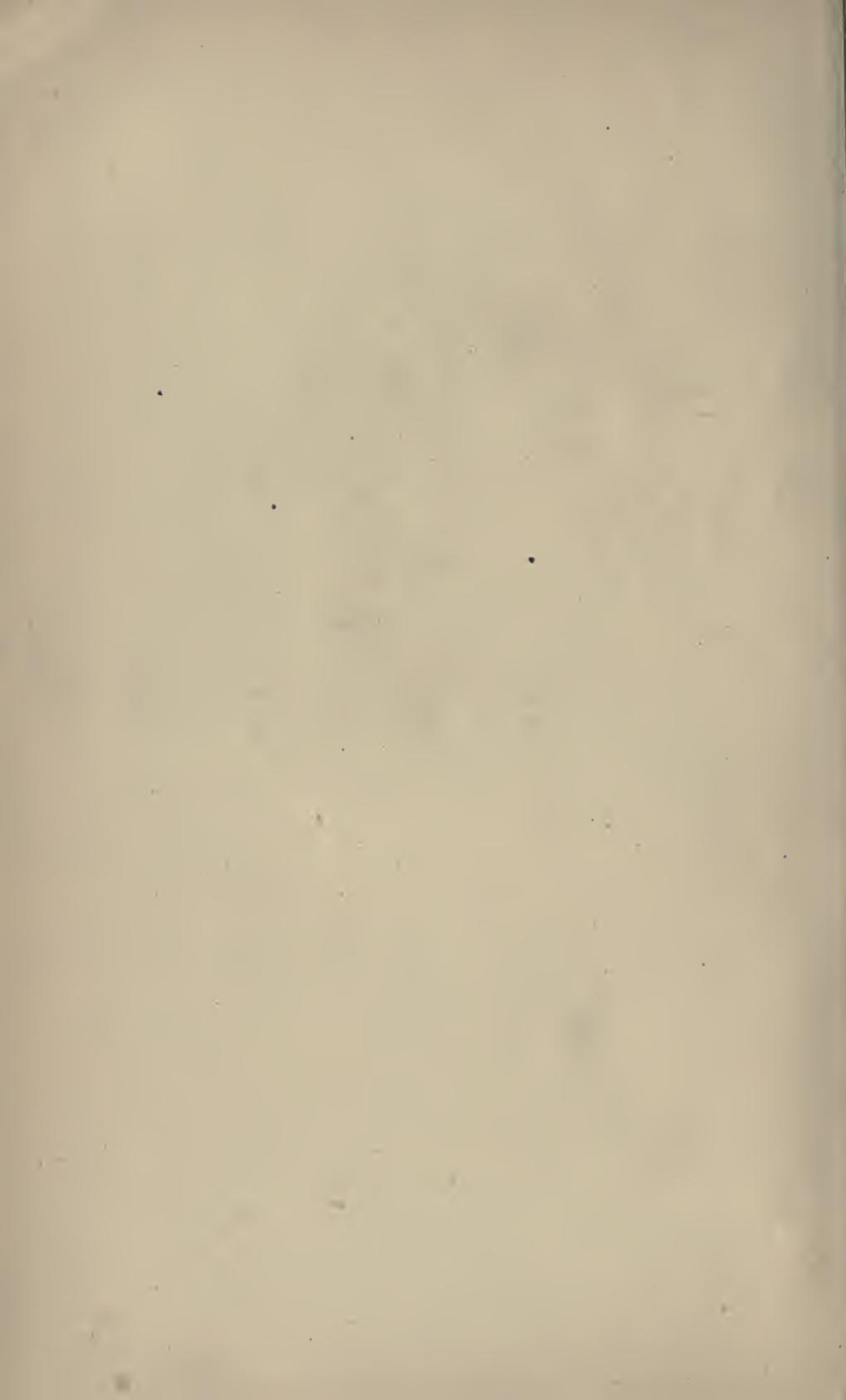
It would be tedious to tender in detail acknowledgments for that large and generous aid which has made this book possible—the reminiscences so kindly placed at our service by those who have had special opportunities for observation; the authentic anecdotes (often throwing remarkable light on obscure beginnings), as well as the practical knowledge which has helped us to thread our way amidst the tangled history of complex

mechanical inventions and industrial improvements.

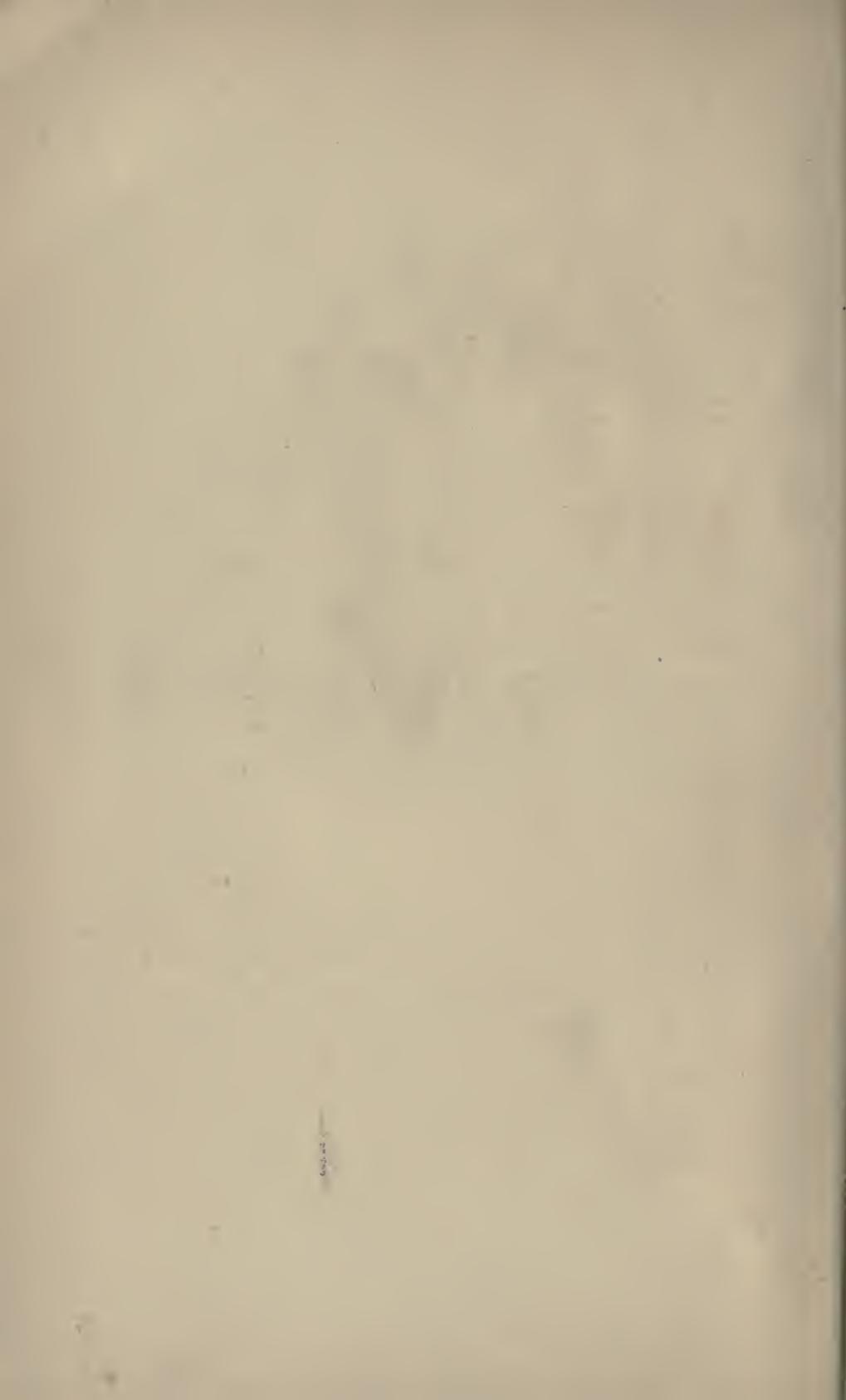
It is hoped that this book may thus be found a genuine contribution to our Commercial History. Those only who have been engaged in a similar task can fairly estimate the labour involved in welding such an enormous mass of miscellaneous matter into homogeneous form, so as to give a clear, succinct idea of the rise and progress of Houses which have made a very distinct mark on the Industrial and Mercantile World.

CONTENTS.

THE STORY OF ISAAC HOLDEN (<i>with Portrait</i>) - - - - -	1
MR. S. C. LISTER AND THE STORY OF "SILK WASTE." - - - - -	45
THE LOW MOOR COMPANY - - - - -	87
SIR JOSIAH MASON - - - - -	129
THE ROMANCE OF INVENTION: SIR HENRY BESSEMER - - - - -	185
SIR JOHN BROWN - - - - -	241
THE SALTS, AND THE DISCOVERY OF ALPACA - - - - -	289
THE PEASES OF DARLINGTON - - - - -	331
THE FISONS AND FORSTERS OF BURLEY-IN-WHARFEDALE - - - - -	379
THE FIELDENS OF TODMORDEN - - - - -	411



THE STORY OF ISAAC HOLDEN.



THE STORY OF ISAAC HOLDEN.

HN the Paris Exhibition of 1878 there was, in the French section, one little department devoted exclusively to the display of samples of combed wools. There was much that was calculated to charm the eye in that neatly-arranged collection of delicate fibres, so soft and sleek and clean and lustrous did the fleecy fragments look beneath the shelter of their glass cases. Foremost amongst the *exposants* in this department appeared the names of "I. Holden & Fils;" and although to the uninitiated there might not seem to be much difference between the quality of the *laines peignées* exhibited by this firm and the quality of the wool shown in some of the contiguous cases, still it was plainly observable that such visitors as had special knowledge of these matters bestowed much attention upon the particular case which had

been appropriated to the use of "I. Holden & Fils ;" for it was well known to the manufacturers, merchants, and business men connected with the trade that there was represented in that one case the work of the chief firm of woolcombers now in existence.

To the outside world, untutored in the ways of trade and ignorant of the vastness of its many ramifications, a simple statement of this kind will doubtless mean little ; but the addition of a few facts and figures, taken from the industrial annals of England and France, will serve to convey some idea of the magnitude of the woolcombing trade generally, and of the extent of the operations of Messrs. Isaac Holden & Sons in particular. Messrs. Holden have three separate establishments engaged in woolcombing—one at Bradford, one at Croix, near Roubaix, and one at Rheims. These three concerns cover altogether over twenty-three acres of actual flooring, and give employment to 4,000 work-people. The firm have a total of 500 carding and 370 combing machines working, accomplishing as much labour as it would have taken 25,000 workmen to have got through in the old

days prior to the introduction of the wool-combing machine.

This gigantic business has been built up with a rapidity which is almost unparalleled. Three decades have hardly passed since Isaac Holden, the founder of the firm, went out as the pioneer partner of Mr. S. C. Lister (whose connection with woolcombing inventions is so well known and commemorated) to seek a fresh field of operation amongst the manufacturers of France for the machine which was destined to make Mr. Holden a princely fortune. How Mr. Holden came to engage upon this enterprise, and how, from being a collier's lad, he worked his way up to a position of splendid commercial prosperity, and gained a degree of affluence which is great even in these days for a successful captain of industry, it is the purpose of this sketch to relate.

Isaac Holden was born on the 7th of May, 1807, at Hurlet, a little village adjoining Nitshill, between Paisley and Glasgow. His father, who bore the same name, had a few years previously held a small farm at Nenthead, near Alston, in Cumberland, of which place he was a native,

and had combined the occupation of farmer with that of lead-miner. About the beginning of the century, however, the lead-mines in which his family had long worked with varying success became exhausted, and, in 1801, the father found it necessary to remove to Glasgow, where he succeeded in obtaining employment in a coal-mine. Isaac Holden senior was a man of considerable strength and energy of character, and was possessed of an intelligence superior to his station. He came of a hardy and enterprising race; for the Holdens of Allendale, Nenthead, and Alston, were proud to consider themselves descended from that Halfdane of Denmark who ages ago invaded England, and retained possession for some time of Northumberland, Cumberland, and Durham, ultimately settling down on the confines of the three counties. When the poor lead-miner betook himself to Glasgow, he deemed it prudent to leave his wife and four children behind him at the little farm at Nenthead; but it was not long before he felt sufficiently settled in his new occupation to induce him to have his family with him in Glasgow. His wife belonged to a Scotch family of the name of Forrest, and

was a pious, industrious, high-principled woman. They had been married in the Anglican Church at Alston. The parents of this hard-working respectable couple were amongst the earliest followers of John Wesley, and lived and died staunch members of the Wesleyan Church.

After remaining some time at Glasgow, Isaac Holden the father—who seems to have had the capacity of making headway in whatever employment or project he entered upon—obtained a situation at the Wellington pit, Nitshill, and it was during the time that he held the post of headsman at this pit that his son Isaac was born. Assiduous, earnest, and upright in all the relations of life, the elder Holden sought by every means in his power to promote the material and spiritual welfare of his family, and to extend the cause of education and moral progress amongst the people around him. He established a night-school in the village, and devoted his leisure hours to the teaching of his neighbours' children—a duty which he was proud to put upon himself, and which he generously performed without the slightest remuneration. Thus early was manifested the

public spirit and philanthropic zeal which have always characterised the actions of the Holdens, and gained for them so wide a measure of respect. On Sundays, as well as on weekdays, the pit headsman kept steadily to his useful work. There was a good Wesleyan chapel at Paisley, three miles away, and seldom a Sunday came that did not find the elder Isaac Holden and his wife and family walking to Paisley to divine service, the younger Isaac forming one of the party while but a mere child, walking and being carried in the arms of his loving father in turns. In addition to accomplishing this religious pilgrimage of six miles every Sunday, the father conducted a Sunday school which he had established in the village, at a time when such institutions were few and far between.

In 1812, when Isaac was five years of age, the Holdens removed to a small thatched cottage which had been used as a sort of farmhouse, about a mile from Nitshill, where there was a school which served the double purpose of day and Sabbath school. This school, which was in connection with the Church of Scotland, and in the founding and management

whereof the elder Holden had taken a leading part, was the place where young Isaac entered upon his first course of educational training. He went regularly to this school until he had reached his tenth year, when the family found it necessary to remove to Kilbarchan, about nine miles distant, where the father had obtained some fresh employment.

Times were very bad at this period. The country had just emerged from that protracted war which had almost drained it of its resources, and brought commercial enterprise to a point of utter stagnation, and the burden of poverty pressed heavily upon the working classes. Labour was but scantily paid for, and poor families were compelled to put their children to work as soon as their little hands were able to earn any trifling sum towards their support. The elder Holden struggled against this as long as he was able, and even contrived to send his son Isaac to the grammar-school of the town for a few months after their removal to Kilbarchan. The lad, however, saw what was passing

around him, and felt that his father could ill afford to keep him at school; so he set himself, young as he was, to find some employment. Hand weaving was one of the chief industries of the district, and Isaac engaged himself as "draw-boy" to two weavers in the neighbourhood, his father only consenting to let him go, however, on condition that his education did not suffer. Isaac continued to work as "draw-boy" for the next two years, during the whole of which time he went to a night-school, and diligently employed himself in improving his education.

It now became necessary for the family to remove again, the father having obtained a better situation at the village of Johnstone. At Johnstone, Isaac was again sent to a day-school; but the yearning for some active occupation seized him once more, and he went to work in a cotton-mill, where he was engaged from early morning until eight o'clock at night, after which hour he went regularly to the night-school attached to the mill. This state of things did not please his father, whose solicitude concerning his son's educational

training was always strong; so he took Isaac away from the factory once more, and sent him to a school where he had the good fortune to become the pupil of Mr. John Fraser, a very able and zealous teacher, the father of the celebrated “Fraser family” of some thirty years ago, and who is still living and glories in the name of the Old Radical, a cognomen by which he is well known in the west of Scotland. Isaac was at this time about thirteen years of age, and began to approach some of the higher branches of study, Latin being a portion of the curriculum of Mr. Fraser’s school. But the desire for work was so strong in the lad’s mind that he was not to be kept from it, so he again got a situation in a cotton-mill—this time as a “piecer”—and attended Mr. Fraser’s night-class, and continued the study of Latin and book-keeping there for about twelve months.

It is related by certain elderly villagers, who can remember the time when they were the companions of Isaac Holden, that about this period a circumstance happened which

probably had some influence for good on the mind of the lad, although in itself the incident would scarcely be considered as of an improving nature. Isaac was a diligent, patient, and persevering worker, and, as is usually the case, these were precisely the qualities of mind which were most obnoxious to the more noisy and more demonstrative of his companions; and to one lad in particular they were so distasteful that he never ceased to tease and domineer over Isaac, until one day this braggart's conduct grew so outrageous that matters were brought to a climax between the two. The lad referred to was a year or two older than Isaac, and considerably taller; he therefore presumed upon his physical superiority, and on the day in question took off Isaac's cap and threw it down into the mud. To the astonishment of the other boys, Isaac told the lad that if he did not at once fetch the cap and clean it he would punish him. The lad laughed, and said, "An Englishman cannot fight," and walked away. The same afternoon, however, Isaac sent a friend to challenge the tyrant to battle, and in the evening, after the

factory was closed, they met in a field; and after fighting for more than an hour, Isaac was declared the victor, having punished his opponent to such an extent that he was glad to own that an English boy *could* fight after all, and to apologise for his past conduct towards Isaac.

Encounters of this description were common enough at that day amongst the working population, whose ideas of sport and recreation were generally on the borderland of brutality. It said much for young Isaac's energy of character, however, that, despite the better influences that were at work within him, he could plunge himself into conflict with, and overcome, a blustering overbearing rival.

Later on, Isaac Holden was again in a position to quit the factory and give himself up wholly to the acquirement of knowledge. He returned to Mr. Fraser's school, and remained there until he was fifteen years of age, when his father removed to Paisley, where Isaac was apprenticed to an uncle, a shawl-weaver.

As Isaac Holden advanced towards manhood

the example of his parents and the deep sympathy he felt with all moral and intellectual progress tended to give his mind a decided religious cast, and he became a member of the Methodist Church. For a time it appeared as if his life would become altogether alienated from trade pursuits. Shawl-weaving proved to be too much for his strength, and after struggling with it for about twelve months, he relinquished all further effort in that direction and turned his attention more closely than ever to scholastic studies. He joined the school of Mr. John Kennedy, a very able teacher, a noted mathematician, and lecturer on physics, chemistry, and history to various Paisley and Glasgow institutions. When from sixteen to seventeen years of age Isaac became assistant to Mr. Kennedy, and received private lessons from him in mathematics, physics, Latin, Greek, &c. Mr. Kennedy took a kindly interest in his pupil, and was always ready to help and encourage him to higher efforts.

In 1826 the elder Holden died, and young Isaac found his mother and a younger brother entirely dependent upon him. By this time, how-

ever, Isaac was happily in a position to provide for them, his employment under Mr. Kennedy being now sufficiently profitable to admit of his doing so. He remained with Mr. Kennedy until January, 1828, and then, when in his twenty-first year, he made his first adventure out into the world, and engaged himself as mathematical teacher to the Queen Square Academy, Leeds, the principal of which was Mr. James Sigston. This was then one of the largest and most respectable boarding-schools in the country, and seemed to present a good opening for Mr. Holden. Unfortunately, religious feeling ran high at that time, and young Holden had strong views and opinions on matters theological, and expressed them freely and boldly. Strife and contention ensued, and at the end of the first half year the mathematical tutor deemed it advisable to transfer his services to Lingard's grammar-school at Slaithwaite, near Huddersfield, which he entered as teacher of the English and commercial departments. Mr. Butterfield, the head master, was a man of considerable classical attainments, and under him Mr. Holden enjoyed the advantage of being able still further to prosecute his studies in Latin and Greek. For

a time all went smoothly, and then the "religious difficulty" again presented itself, and Mr. Holden found it expedient to resign.

Mr. Holden now went further south, and engaged as classical master to the Castle Street Academy at Reading, of which institution Mr. Greathead was the principal. At this establishment Mr. Holden found a wider scope for his talents than he had ever had before, and it was there that he first turned his mind to scientific experiment and invention. He taught Latin and Greek to advanced classes, and had also several French classes. He had acquired French at Paisley, in the first instance, from the Rev. John Hick, a Wesleyan minister from Canada, and, having continued the study of the language, then, as well as subsequently, found it of the greatest use to him. Mr. Holden got on so well at the Castle Street Academy that by the end of the first term he was able to establish a series of lectures on science and history, which he gave on Wednesdays and Saturdays to about a hundred youths, varying in age from twelve to twenty-four years. At Mr. Holden's suggestion the youths subscribed to provide a chemical labora-

H tory, and he gave them a lecture on chemistry, with experiments, once or twice a week.

It was in the course of these chemical experiments that Mr. Holden made a discovery, of which he thought little at the time, but which subsequently proved to be of great value to the world at large. Without any specially directed effort, but by accident, as it were, Mr. Holden, in October, 1829, invented that most useful and necessary of domestic articles, the lucifer match. Had Mr. Holden at that early period conceived the idea of devoting himself to invention or business enterprise as a means of existence, he would probably have thought less lightly of this discovery, and would have secured the benefit of it to himself, according to the patent laws; but he contented himself simply with imparting the full knowledge of his invention to his science class, and there, as far as he was concerned, was an end of the matter. The story of this discovery has been told by Mr. Holden himself in the House of Commons before a Select Committee appointed to inquire into the working of the patent laws. We cannot do better, therefore, than give it in his own words.

"I began as an inventor on a very small scale," said Mr. Holden, in the course of his evidence. "For what I know, I was the first inventor of lucifer matches; but it was the result of a happy thought. In the morning I used to get up at four o'clock in order to pursue my studies, and I used at that time the flint and steel, in the use of which I found very great inconvenience. I gave lectures in chemistry at the time at a very large academy. Of course I knew, as other chemists did, the explosive material that was necessary in order to produce instantaneous light; but it was very difficult to obtain a light on wood by that explosive material, and the idea occurred to me to put under the explosive mixture sulphur. I did that, and published it in my next lecture, and showed it. There was a young man in the room whose father was a chemist in London, and he immediately wrote to his father about it, and shortly afterwards lucifer matches were issued to the world. I believe that was the first occasion that we had the present lucifer match, and it was one of those inventions that some people think ought not to be protected by a patent. I think that if all inventions were

like that, or if we could distinguish one from the other, the principle might hold good. If all inventions were ascertained and carried out into practice with as much facility as in this case, no one would perhaps think of taking out a patent. I was urged to go and take out a patent immediately; but I thought it was so small a matter and it cost me so little labour, that I did not think it proper to go and get a patent, otherwise I have no doubt it would have been very profitable."

Small as the impression was that was made upon Mr. Holden by this circumstance at the time, there is little doubt it tended to direct his mind towards invention as an ultimate means to the attainment of wealth. Still he was so deeply imbued with religious sentiments and yearnings, that for a long time he seemed to hover between the field of Christian labour and ministration and the field of industrial enterprise. He remained for eighteen months at the Reading academy, which for that period provided him with a happy home and a sphere of useful activity; but, his health failing him, he was compelled to resign his situation and return to his northern home. Further than that,

he was forced to relinquish an engagement which he had entered into to go into the Wesleyan ministry.

It was in June, 1830, that Mr. Holden went back to Scotland, much to the delight of his mother, over whose welfare he had continued to exercise all possible protection. An early friend of his in Glasgow erected a school for him, and Mr. Holden was soon in the full enjoyment of the privileges of a Scotch dominiè, and it appeared as if he had at last found the one particular work which would have to content him for the remainder of his existence. But accident again intervened, and, ere he had been in his new school six months, the whole tenor of his life was changed by a very simple circumstance. Mr. William Townend, a member of the firm of Townend Brothers, of Cullingworth, near Bingley, in Yorkshire, happened to be in Glasgow in the November of that year, and was looking about for some one whom he might engage as book-keeper. A local gentleman, who knew Mr. Holden well, recommended the young schoolmaster for the post, and Mr. Townend called on Mr. Holden and offered to engage him. After a day's con-

sideration, and with the consent of the friend who had built the school, Mr. Holden accepted the offer, sold the furniture and good-will of the school to an old pedagogue in the neighbourhood, and in about a week from that time left Scotland for Cullingworth, where he duly arrived at the end of November, 1830.

This was the turning-point in Mr. Holden's career. Henceforward he devoted his whole energy and ability to industrial pursuits, and found himself in an atmosphere congenial to his inclinations, where the full force of his intelligence, perseverance, and industry—qualities which constitute the leading elements of what we commonly term genius—could be successfully exerted. Cullingworth was, and still is, a sort of old-world place, beyond the reach of railways, "smelling of Flora and the country green," inhabited by a community of rugged, good-hearted Yorkshire dalesmen, and perched high among the same moorland hills upon which Charlotte Brontë used to look out from the lonely Haworth parsonage where she wrote her remarkable books. At first it must have seemed a curious notion to plant a factory out in this

remote corner of the world ; but the Townends were men of "grit" and energy, and they succeeded in establishing there an extensive manufacturing concern, and in gathering round them a prosperous hard-working community.

Coming amongst these people at so favourable a time—himself in the full vigour of youth and hope and high purpose, and the trade with which he was connecting himself in the active process of expansion and development—Mr. Holden soon found that he could give such shape and purpose to his life as had never before appeared possible. In the worsted trade he saw that there was a wide field for the exercise of inventive skill, and for the employment of labour and enterprise; and with a worthy ambition he set himself to work to achieve a position of honour in the industrial world, with which he had now so firmly allied himself. Buffon said that genius was patience ; some other celebrated person has said that it is "the power of making efforts." If that be so, Isaac Holden must undoubtedly be credited with the possession of genius, for it is in patience and continuance of effort that he has, above all, distinguished

himself. For sixteen years—from 1830 to 1846—Mr. Holden devoted himself to the service of Messrs. Townend, and during all those years of study and experience was steadily preparing himself for the particular work which he afterwards adopted as the chief object of his life—machine woolcombing.

At the time when Mr. Holden came to Cullingworth, the woolcombing machine was far from being an accomplished fact. Inventors were at work in England, France, and America trying to solve the problem; but much remained to be done before the labour of the handcomber was to be effectually superseded. It would be impossible within the limits of this paper to trace the history of the woolcombing machine through its various stages of existence, from the time of the Rev. Dr. Cartwright, the inventor of the powerloom, who so far back as the year 1790 took out a patent for woolcombing, to the present year of grace, when Mr. Holden, after upwards of forty years' experience, has added yet another woolcombing patent to the hundreds that have been taken out before. The wonderful amount of experiment that has been made from

time to time in the creation of the woolcombing machine is to some extent indicated by the statements made by Mr. Holden before the Royal Commission. He said he had been told that “experiments connected with the combing of wool have cost the experimenting inventors the sum of 2,000,000*l.* sterling ;” that he himself had spent 50,000*l.* in experiments, and that Mr. Lister had spent a greater sum even than that.

Mr. Holden’s first acquaintance with woolcombing was made immediately after his arrival at Cullingworth, when one of the Townends, after showing him round the works, took him to see a handcomber. Mr. Holden inquired if the manual operation he then saw being performed had not been attempted to be done by machine, and he was told that there had been many attempts, but that the fibre was so delicate, and so difficult of treatment by machinery, that every trial had failed. From that time Mr. Holden decided to make it his work to try to overcome the difficulty. He began by making himself acquainted with all that had been previously done in this direction, and then he commenced to experiment on his own account.

For about a year Mr. Holden acted as book-keeper to Messrs. Townend; but it was soon seen that the mill was his proper sphere; and from that time it was there that he chiefly employed himself, after a while being made manager, and subsequently partner. Those were days of hard and earnest work. He went to the mill every morning at six o'clock, and seldom left it before ten at night; and only on two or three occasions during fifteen years did he take a week or two's holiday.

In 1832 Mr. Holden married his first wife, Marion, the eldest daughter of Mr. Angus Love, of Paisley. This estimable lady, to whom he had been engaged since 1826, proved a valuable helpmeet to the inventor, and by her womanly heart and excellent example won the esteem of all who knew her.

In 1833 Mr. Holden urged Messrs. Townend to try Collier's combing-machines, which had just been patented, and they purchased seven of them. The machines, however, were very imperfect, and brought loss and trouble to Messrs. Townend. For a time Mr. George Townend, the senior partner, looked after the machines; but in 1836

he gave them over to Mr. Holden, and the latter experimented upon them, and applied such improvements as enabled them to be worked to advantage.

As time wore on, Mr. Holden grew more desirous than ever of concentrating his energies upon the combing-machine. Many other successful inventors were already in the field, and important patents for combing-machines had been taken out by Mr. Lister, Mr. Donisthorpe, Mr. Ramsbotham, and others; but Mr. Holden's idea was to imitate as closely as possible the work of the handcomber, and on that basis, he has consistently laboured throughout. It is not the time now to say how much this or that inventor has done towards perfecting the combing-machine; the story is one of such great complexity, and has engaged so many conflicting interests, that it is difficult to remove it into the region of clear and unbiased narrative. Suffice it that the manufacturing world is under great obligation to the noble workers by whose ingenuity and industry the invention has, in its several forms, been wrought out. The names of Collier, Heilmann, Donisthorpe, Lister, Holden, Noble, and

Hubner must always stand prominently forth in the history of woolcombing, whenever that history comes to be written. To Mr. Lister, Bradford has already erected a monument, in celebration chiefly of his achievements in regard to the combing-machine. For very many years Mr. Lister occupied himself, and was the means of occupying others, in improving this invention; and when Mr. Holden found that Messrs. Townend were not inclined to risk anything on woolcombing patents, he resolved to leave Cullingworth, and endeavour to effect an alliance of some sort with Mr. Lister.

In 1846, therefore, Mr. Holden removed to Bradford, and took premises there, where he worked out some plans of making Heald and Genappe yarns, and some improvements in carding and in Collier's combing-machine, which latter were patented in Lister & Holden's joint-patent of 1847. In an interview with Mr. Lister in 1847, and from time to time up to August, 1848, Mr. Holden avowed his ability to improve Mr. Lister's machine, so as to make it a most valuable one for merino wools, and advised Mr. Lister to introduce the machine into France, where Mr.

Holden thought it would have a better chance than in England. The upshot was that, after a journey of inspection which Mr. Holden made in September and October, 1848, the two agreed to begin combing there in partnership, under the style or firm of "Lister & Holden."

The troubled condition of the political horizon, and the intense uneasiness which prevailed in commercial circles during this year of revolution, would have deterred most men from venturing upon an enterprise of such magnitude; but Mr. Holden was far-seeing and sagacious, and had full faith in himself and the future. He had, while over in October, chosen a mill for the commencement of operations, and had left their agent to arrange the lease; but when he went to Paris in January, 1849, expecting all to be ready, he found himself harassed by disputes and discussions with the trustees of the property, and at length, owing to a strange and unaccountable circumstance, the negotiations were broken off. Mr. Holden dreamed one night that he had gone to St. Denis to look after a mill, and that he had found one there, having been shown over it by candlelight. Whether this induced him to go to St. Denis the

following day, or whether some other matter led him there, we are unable to say; but it is the fact that he went thither, that he found a mill that suited him, that he took it, and that he was shown over it by candlelight.

Both in France and in England the manual labour of the handcomber was now destined to be speedily supplanted by the new machines. Up to that time the handcombers had formed a very important element in the worsted industry. They had been looked upon as inevitable components of an extensive trade, and had been accustomed at septennial periods to hold high festival in honour of their patron-saint, the martyred Bishop Blaize, who was believed to have invented the art of woolcombing in the reign of Diocletian. The last of these pageants was held in Bradford in 1825, five years before Mr. Holden's introduction to the worsted trade. Many men still living hold that day in remembrance. It is recorded that the town was crowded with sightseers, and that the procession, which was to a considerable extent symbolical, created a great impression. First, there came a herald bearing a flag; then "woolstaplers on horseback, caparisoned with a fleece;"

then worsted-spinners and manufacturers on horseback, in white-stuff waistcoats, "with each a sliver over the shoulder and a white-stuff sash, and the horses' necks covered with nets of thick yarn." Following these came merchants "with coloured sashes;" then "apprentices and masters' sons," wearing "ornamented caps, scarlet-stuff coats, white-stuff waistcoats, and blue pantaloons." Persons were also dressed up to represent the King, the Queen, Jason, Medea, and so forth; the legend of the Golden Fleece being worked in in several ways. The Bishop was also personated; and the procession wound up with "combers with wool wigs," and "dyers with red cockades, blue aprons, and crossed slivers of red and blue." It was the custom, too, for some leading personage on these occasions to repeat certain lines of verse which had been composed in honour of Bishop Blaize. The lines are curious, if not very poetic, and opened in this strain:

"Hail to the day whose kind auspicious rays
Deigned first to smile on famous Bishop Blaize;
To the great author of our combing trade,
His days devoted and due honour paid;
To him whose fame through Briton's isle resounds,
To him whose goodness to the poor abounds;
Long shall his name in British annals shine,
And grateful ages offer at his shrine!
By this our trade are thousands daily fed
With means by it to earn their daily bread."

The poet then plunged into mythological imaginings, and finished with the following hearty couplet :

“ For England’s commerce and for George’s sway,
Each loyal subject give a loud hurrah, hurrah ! ”

But there were no more Bishop Blaize festivals to be held after the combing-machine got fairly into operation. There never was a more sudden and complete transformation effected in any branch of industry than this that was wrought in woolcombing. Thousands of combers were left without employment. Messrs. Townend had themselves kept seven hundred handcombers going at one time.

It was the same in France. When Messrs. Lister & Holden began their works at St. Denis, woolcombing was done chiefly by peasant farmers at their own homes. The work was scattered far and wide over the country, being managed by agents in the various localities, who delivered the raw wool to the combers and collected it when combed, at a certain commission. The combs they used were rude instruments with steel teeth, some eight inches long and an eighth of an inch in diameter, and the work they did was so imperfect that the wool required picking in all the stages of spinning and manufacturing. What

a difference there was between those handcombs and the combs now used by Messrs. Holden in their machine! The latter combs contain teeth finer than the finest sewing-needle, in some instances forty of them being set in a lineal inch in the rows of the combs.

Messrs. Lister & Holden had soon a successful woolcombing business established in France. Mr. Holden felt that he had now a work before him that was worthy of all his powers and energy, and he laboured hard to carry it to its full accomplishment. During the first year in France, what was known as "the circular comb, with Donisthorpe's felling-heads," was used; but, in 1850, Mr. Holden brought forward his favourite "square motion" machine—a machine which he claims to have mainly originated, and which, year after year, he has so altered and improved as to make it, in many respects, the best machine in the trade. The superiority of the machine is sufficiently attested by the fact that its owners have been able by its aid to create the most extensive woolcombing business in the world. Mr. Holden's partner was in favour of other machines; but with

singular tenacity of purpose Mr. Holden adhered to the “square motion” principle, and, in spite of much contention and bitterness, eventually succeeded in establishing it.

It may not be amiss in this place to indicate briefly, for the information of the reader unversed in the technicals of woolcombing, what the particular operation is that is performed by the combing-machine. The machine takes the raw wool, combs the fibres dexterously out, places them exactly parallel with each other, separates the long fibres from the short ones, and draws out the former into one united sliver, in which condition it is ready to be submitted to the spinning process. The slivers thus produced are called “tops.”

Mr. Holden pursued his one object with undeviating, dogged, and incessant perseverance. For many years he worked almost night and day. The mills ran then, as they run now, through the night, two sets of workpeople being constantly employed. In 1852 they extended the sphere of their operations, and founded a branch establishment at Rheims, and another at Croix, near Roubaix. While these three French

concerns were in operation, Mr. Holden visited each frequently, always travelling by evening trains, and keeping up an active supervision over the whole of the establishments. He also was often required to visit England, and, altogether, must have had a heavy responsibility upon his shoulders. At one period he had eight law-suits proceeding at the same time, in reference to patents, and he made it a rule to prepare the briefs himself, and he was always present at the audiences in the tribunals. During this exciting time, when his presence was frequently demanded in England, he was sometimes known to cross the Channel five nights in one week, alternately attending the courts in France, and doing business in England during the days. It is worth while remarking that although Mr. Holden had many law-suits in France, he never lost but one of them; and that one he persevered in only to obtain the decision of the courts on the point whether a few days' delay in taking a French patent after the registration of the English one vitiating the former; and it was ruled that this was so.

In 1858 Mr. Lister desired to retire from the

French concerns, and proposed to sell his share in them to Mr. Holden. An arrangement was come to : Mr. Holden bought Mr. Lister's interest ; and in January, 1859, the present firm of " Isaac Holden & Sons " was established, Mr. Holden's two sons, Angus and Edward, being taken in as partners. In addition to this, in 1860, Mr. Holden's nephews, Mr. Jonathan Holden and Mr. Isaac H. Crothers, were appointed managing partners, the one at Rheims and the other at Croix. Recently, however, Mr. Jonathan Holden has retired from the firm, and the management of the Rheims concern, as well as that at Croix, has been undertaken by Mr. Crothers.

The works at St. Denis were relinquished in 1860, the place being too far removed from the special industry with which woolcombing was linked. About this time, too, Mr. Holden thought it necessary to remodel all their machinery for washing, carding, and gills, and to perfect the Nacteur comb, from which he anticipated a new life. To accomplish this he purchased a small mill at Bradford, and adapted it as a mechanics' shop for experiments. Four years of excessive application followed, during which time some

20,000*l.* was spent in experiments. The result fully justified the expenditure.

This productive and laborious workshop at Bradford was closed in 1864, soon after the opening of the Alston Works, their Bradford wool-combing concern. Mr. Thomas Craig, who had served the firm faithfully for many years, and who had greatly assisted Mr. Holden by his practical mechanical skill in maturing inventions, was made managing partner of the Alston Works, and the whole three establishments were continued successfully, and are now in full activity.

Mr. Holden's health broke down under this intense strain, and his doctors insisted on an entire change of occupation and rest. Fortunately, the business of which he was the head had by this time been so completely and successfully established, that it could well afford to dispense with his personal superintendence.

Mr. Holden, who had always taken a deep interest in political matters, and was a Liberal of the most advanced order, was now urged to adopt a parliamentary career ; and in July, 1865, he was elected to represent the town of Knaresborough, for which place he continued to sit until November,

1868, when he resigned the seat in favour of his son-in-law, Mr. Alfred Illingworth, the present junior member for Bradford, and, in response to the call of the Liberals of the Eastern Division of the West Riding, contested that division in the Liberal interest with Mr. H. J. Thompson, but was defeated. In 1872 he was prevailed upon to come forward to contest the Northern Division of the Riding against Mr. F. S. Powell, for the seat rendered vacant by the death of Sir Francis Crossley. The contest was an exceedingly close one. The poll was the heaviest that had ever been known. Mr. Holden, however, was unsuccessful; but the fact that he secured in that large constituency only forty-four fewer votes than his opponent was almost as good as a victory. The Liberal party were divided by dissensions at this time, or there is little doubt Mr. Holden would have been returned by a large majority. In 1874 the disunion still existed; but had Mr. Holden been brought out again for the Northern Division he would have been successful. As it was, he was once more solicited to fight the battles of the Liberals of the Eastern Division, and he and Sir John Ramsden made a gallant effort on their

behalf; but were defeated. When the last vacancy occurred in the representation of the Northern Division, by the death of the late Lord Frederick Cavendish, Mr. Holden was elected, however, and now sits for that large and important constituency. Mr. Holden's generous help has always been accorded to every movement for the advancement of his own political cause, and for the social improvement of the people. Mr. Holden's liberality, indeed, is of the most large-hearted description, and in the futherance of religious, charitable, and political objects, his gifts have been unstinted. Not long ago Mr. Holden and his son Angus gave 3,000*l.* towards the establishment of a technical school at Bradford; and the firm to which they belong, it has been estimated, have, during the last ten years, in Bradford alone, given not less than 20,000*l.* in aid of charitable objects and schemes of social improvement; while in France they have contributed even on a wider and more liberal scale. During the trying period of the Franco-German War Messrs. Holden provided all their hands, at Rheims and Croix, with two meals a day gratuitously.

Mr. Holden lost his first wife shortly after his removal to Bradford in 1847, and in 1850 he married Sarah, the daughter of Mr. John Sugden, of Dockroyd, Keighley.

Mr. Holden resides at Oakworth House, near Keighley, and has a country mansion at Wiganthorpe, near York. His eldest son, Angus, was Mayor of Bradford for three years in succession from 1878 to 1881.

Thus stands the brief outline of Mr. Isaac Holden's remarkable career. The story would be incomplete, however, were we not to make some further reference to the great industrial concerns which, by his energy and skill, he has founded and successfully established.

At Croix, Messrs. Holden & Co. effected a great change in the configuration of the landscape when they came to put into operation their gigantic works. They found the place a straggling agricultural hamlet of some 1,700 inhabitants, and transformed it into an industrial colony whose population is now about 6,000. The works cover several acres of ground, and have very picturesque surroundings. They abut upon the main street of the village, which street is

called after the resident partner, and is bordered by rows of tall Lombardy poplars. The Rue Holden-Crothers is an orderly, well-kept street, extending the whole length of the village. In the middle distance rise the substantial walls of the combing sheds, and towering high above are the tall chimneys connected with the engine-houses. At the extreme end of the street there is a row of pleasant-looking houses, with pretty gardens. This is called the "English Row," from the fact that it is mostly occupied by the English portion of the Croix community, who number from 200 to 300 persons. Beyond the "English Row" stands the very French and very handsome château which is the residence of Mr. Isaac H. Crothers, the managing partner. At the other end of the village, where the new colony intermingles with the old, there is a fine English church, built and mainly supported by the firm; and an English Mechanics' Institute and an English school have been built in the same locality. Every provision has been made by Messrs. Holden for promoting the social and moral welfare of their workpeople.

A branch line of railway runs direct into the

works, putting them into communication with all parts of France; and long lines of trucks, piled up with bales of wool, are daily to be seen waiting their turn for admission into the combing precincts. Croix is favourably situated, near to Roubaix and Tourcoing, and not far from the ancient town of Lille.

The works at Rheims are constructed on the same principle as those at Croix. The same expanse of walls enclosing several acres of machinery, and the same tall smoke-emitting chimneys, present themselves; and the same care is taken of the social and spiritual comfort of the workpeople. There is an English colony, an English school, and an English lecture and reading room; and a handsome Wesleyan chapel, erected by the firm, stands close to the works, and forms quite an architectural feature. For the managing partner there is a large well-appointed mansion adjoining the works, as is the custom in that part of the country.

It is worth while mentioning that both Mr. I. H. Crothers and Mr. Jonathan Holden have both been created Chevaliers of the Legion of Honour, in recognition of the great services

rendered to French industry by the firm of Isaac Holden & Sons.

There is a great contrast between the working regulations which prevail in France and those which obtain in England. The French concerns of Messrs. Isaac Holden & Sons are kept in active working from six o'clock on the Monday morning to twelve o'clock on the Saturday evening. The engines run twenty-two and a half hours out of the twenty-four every day but Monday and two relays of workpeople are employed, the day-hands working twelve hours and the night hands ten hours per day. The latter receive the same amount of wages as the former, the two hours' shorter time being considered equivalent to higher pay for night-labour. Mr. Holden took over with him to France, in 1849, a few young English workmen, and from that time to the present there has always been a certain proportion of his own countrymen employed in the French concerns. The French workpeople, however, are active and industrious, and work contentedly and earnestly, and are easy and agreeable to manage when treated with respect and firmness.

The Alston Works at Bradford are situated in the smoke-hued district of Thornton Road, where the worsted industry may be said to have been cradled. The estate comprises eight acres, the great shed alone, in which the different processes of woolcombing are carried on, containing not less than six acres of flooring. In appearance the Alston Works are solid, substantial, and dignified, being built of stone, and of far higher architectural pretensions than is usually the case in buildings designed merely for industrial purposes. Mr. Craig, the managing partner, has a residence adjoining the works, and this and a suite of commodious offices form the Thornton Road boundary of the concern. It is worthy of notice that, in connection with this establishment, Messrs. Holden, with characteristic persistency of endeavour, have obtained water (of which they use immense quantities in washing their wools) by sinking operations within their own premises. After spending 10,000*l.* in this one direction, and boring to an extraordinary depth, they have succeeded in reaching a never-failing supply of water of the purest quality.

Altogether, Messrs. Holden's woolcombing estab-

lishments are entitled to be considered as amongst the greatest marvels of modern industry, and form a remarkable monument to the business sagacity and indomitable energy of their founder. As an example of what can be accomplished by integrity of character, perseverance, inventive skill, and determined purpose, the career of Mr. Isaac Holden is one that may be studied with advantage. For thirty years, through difficulties of the most harassing description, in the face of unworthy abuse and painful opposition, Mr. Holden held manfully and fixedly to his one idea, and the result has been the achievement of a well-earned and honourable success.

“It’s dogged that does it,” say the north-country folk, of which we have a conspicuous instance in this wonderful career—step by step from the weaver’s “draw-boy” to the ownership of a princely income and a place in the British House of Commons.

MR. S. C. LISTER
AND THE STORY OF "SILK WASTE."

MR. S. C. LISTER AND THE STORY OF "SILK WASTE."

N Saturday the 15th of May, 1875, the Right Hon. W. E. Forster stood forth in one of the public parks of Bradford, the centre of an immense concourse of people, and there unveiled a marble statue erected by subscription to commemorate the industrial achievements of Mr. Samuel Cunliffe Lister. The honour thus conferred was a very exceptional one, inasmuch as the statue was erected during the lifetime of its subject, and was a genuine expression of gratitude on the part of a large section of the manufacturing community for benefits derived from Mr. Lister's invention and enterprise. Away from his own field of operation the world knew little of Mr. Lister, deep as the impression was that he had made on England's productive power in the forty years of his devotion to the worsted and silk industries. "I doubt, after all,"

said Mr. Forster, on unveiling Mr. Lister's statue, "whether we are come here to do honour to Mr. Lister so much as to do honour to ourselves. We wish to do honour to those working faculties which have made our country of England a practical, and therefore a great and prosperous and a powerful country. It is this untiring unresting industry which Mr. Lister possesses, this practical understanding, this determination to carry out any object which he is convinced ought to be carried out, and his determination to fear no opposition and to care for no obstacle : it is these practical faculties that have made England what she is. What is it especially that we are honouring ? It is the pluck which this man has shown ; it is the feeling that, having to do with the worsted trade, he said to himself, 'Here is something which ought to be done ; I will not rest until I have found out how it can be done ; and having found out how it can be done, where is the man who shall stop me doing it ?' Now, it was upon that principle that he fought his long struggle ; and so when we read the story of his struggles, ever since 1842, in his two great inventions, we raise this

statue to the man who has successfully fought the battle, and hope that our sons and the sons of all, rich and poor together, will come in after days to admire it, not merely because it gives them the form and features of a rich and successful man, but because it gives them the form and features of a man who was endowed with industry, with intellect, with energy, with courage, with perseverance ; who spared himself no pains in first ascertaining the conditions of the problems he had to solve, and then whose heart never fainted, whose will never relaxed, in determining to carry out those conditions."

Mr. Lister's life has been spent amongst inventions. He has registered more patents than any other man in England, and in carrying out improvements in machinery, of one kind and another, has spent fortune upon fortune, always, however, holding on until success has been won, when his outlay has come back to him four-fold. His career has been marked by two leading episodes. The first portion of his history is prominently associated with the perfecting and bringing into operation of the woolcombing machine, at which he laboured with unswerving

devotion for many years; the second period of his commercial life has been concerned in the invention of machinery for the manipulation of silk waste, theretofore treated as refuse, but now made the basis of many beautiful fabrics in velvets, silks, plush, and other kindred materials. Several hundred thousand pounds were expended by Mr. Lister in respect of the woolcombing-machine before it yielded him a penny; but when once it reached a practicable shape and came to be accepted by the trade, the return he obtained for his labour was on a scale so princely as to put the gains of all previous inventors into the shade. Mr. Lister received as much as 1,000*l.* per machine as patent right. In regard to the silk waste manufacture, his experience has been much the same. Mr. Lister was 360,000*l.* out of pocket at one time by his operations in this direction; indeed, he wrote off a quarter of a million as entirely lost before he began to make up his books again. Still, in 1865, he found himself sole master of the position he had been striving for—possessed of a valuable invention and without a competitor, English or foreign.

To tell the story of Mr. Lister's life from the time when, while yet a mere youth, he entered upon a commercial existence, to the present time, would be to tell the history of two important branches of our textile industries. We cannot attempt to do more than give the rough outlines of such a career.

Mr. Lister was born in the Waterloo year at Calverley Hall, near Leeds, being descended from one of the old county families, the Listers of Manningham. When Mr. Lister was some two or three years old, his father, Mr. Ellis Cunliffe Lister, removed to the family mansion of the Listers, Manningham Hall, and at this seat Mr. S. C. Lister continued to reside for nearly half a century. When Bradford became a parliamentary borough in 1832, Mr. Ellis Cunliffe Lister, in conjunction with Mr. John Hardy, father of the present Viscount Cranbrook, was elected M.P. The position of the family was such that, although Mr. S. C. Lister was but a fifth son, it was never imagined he would adopt a commercial career. In fact, a very different destiny had been marked out for him. from his boyhood he had been taught to regard

the Church as his future field of labour, and he was educated with this view. To make this course still more definite, his grandmother bequeathed him the Rectory of Addingham, on the express condition that he should take holy orders.

It was not to be, however. The world was just then full of "mighty workings :" the steam-god was revolutionising the industrial world, the picturesque valleys of the West Riding were fast becoming dotted with towering factory chimneys, the spirit of invention was everywhere abroad, and the heart of young Lister throbbed with strong yearnings as he saw all these signs of activity spreading around him, and he longed to make one of the great army of workers. It must have been a source of infinite sorrow to the family to find that their efforts to train up a pillar of the Church from one of their number were doomed to failure, and that he had determined to "soil his hands with trade." But, conscious of what was within him, S. C. Lister made his resolve and stuck to it ; and the result has been, not that he has tarnished the lustre of an ancient name, but that he has given a

brightness to it that centuries of simple county magnates could not have equalled.

Mr. Lister was educated at a school on Clapham Common, and then, instead of passing forward to the University, as it was at first intended he should have done, he obtained a position in the counting-house of Messrs. Sands, Turner & Co., Liverpool. While holding this appointment, Mr. Lister made several voyages to the United States, where he made himself well acquainted with what was going on in the shape of invention and enterprise. Those were the days of sailing vessels, and trips across the Atlantic were looked upon as something extraordinary ; so Mr. Lister got some little fame for his knowledge of American affairs, his friends alluding to him generally as "American Sam."

When Mr. Lister came of age he prevailed upon his brother, Mr. John Cunliffe Kaye, to enter into business with him at Manningham. Their father built them a mill, and there the future inventor of the woolcombing-machine first came into contact with the thousand and one yet unsolved problems of the worsted trade. Power-looms had been in use in this manu-

facture some ten years, and the spirit of opposition with which their introduction had been met had now, to a great extent, subsided. Still there was an immense amount of hand-labour retained in the preparatory stages of the manufacture, the hand-woolcombers, amongst other operatives, forming a large and important section of the industrial community. Often, as he watched these men at their work in their homes, and observed the unhealthy nature of their employment—the work having to be done in heated rooms, amidst the fumes of oil and charcoal—Mr. Lister must have said to himself, “I will give my mind to accomplishing this by the aid of machinery.” Mr. Kaye only remained a partner for about two years, retiring on the death of his brother, Mr. W. C. Lister. Not long afterwards Mr. S. C. Lister gave himself up to the work with redoubled vigour, taking into partnership Mr. James Ambler. For a few years the Manningham business went steadily on, Mr. Lister gradually feeling his way into the different branches of the manufacture, carrying on simultaneously both the spinning and weaving operations.

Thus matters went on quietly and successfully, until Mr. Lister got the necessary prompting to take the field as an inventor from having his attention directed to a combing-machine which Mr. George Edmond Donisthorpe was trying to work out. Many other inventors had tried their hands upon such an apparatus before Mr. Donisthorpe, but without obtaining any valuable result, and at that very time other inventors were at work in France and America trying to solve this problem. No wonder this was the case, when we come to consider the magnitude of the prize which awaited the man who could first really master it. Combing was one of the chief operations in the various textile manufactures, and the inventor who could achieve the perfect machine might reckon upon drawing countless thousands from the cotton and worsted lords of the North. But all these efforts of inventors, all these attempts to produce a machine that should comb wool as well as it was combed by hand, were regarded with scepticism and suspicion. Spinners could not be brought to take an interest in the thing, and as for the wool-combers themselves, they simply laughed at

the idea of anyone presuming to imagine that their labours could ever be effectually superseded by machinery: they might spin and weave by machinery; but the manipulation of the fleeces by the combs was, they thought, altogether too delicate a process to be successfully accomplished by mechanical contrivance. When it became known, however, that “American Sam” had taken the combing-machine in hand, some of them began to sing a different tune, for already Mr. Lister, young as he was, had gained a reputation for shrewdness and tenacity of purpose.

Mr. Lister was quick to perceive that, in Mr. Donisthorpe’s invention, there was the germ of such a machine as would entirely abolish the hand-comber, so he made him an offer for it, which he accepted. He then took Mr. Donisthorpe into partnership, and with their interests united and their skill concentrated on this one object, they thenceforward worked together with patience and diligence, until eventually they succeeded in bringing out a machine which gained the acceptance of the trade. What weary vigils there were, what days of toil and

thought and anxiety, what an accumulated expenditure of money, before that vantage-ground was reached! "For twenty years," said Mr. Lister on one occasion, "I was never in bed at half-past five in the morning." Mr. Lister gave all his fortune to the project, as well as all his time and energy.

Having seen Messrs. Lister & Donisthorpe before the public with a combing machine that was capable of doing all that had previously been done by the hand-combers, it will be well to glance at what had been done and was being done, by others in the same field. Dr. Cartwright, the inventor of the power-loom, took out a patent for woolcombing by machinery so far back as the year 1790, but his invention never got into practical use. A Mr. Robert Ramsbotham, some three or four years later, erected a combing-machine in Bradford. He appears to have experimented with it until he became convinced that there was nothing to be made out of it, and it is related that he at last had it carted away, taking his hat off to it as it disappeared, and wishing it good-day. Messrs. Platt & Collier introduced a new combing-

machine in 1827, which was a great improvement upon anything of the kind that had, up to that time, been invented; still, it did not answer its purpose altogether, and found but little favour with the trade. The most important worker in this direction was a Frenchman, Joshua Heilmann. Heilmann was a native of Alsace, and was brought up to the cotton trade. After spending some time in Paris, acquiring a good store of mechanical knowledge, he went to Vieux-Thann, and took charge of a cotton factory there for some of his relatives. He invented several improved machines, and was decorated with the Legion of Honour. At length he conceived the idea of inventing a combing-machine, and became so absorbed in this one project that he lost all taste for other work, and fell into the depths of poverty. Mr. Smiles has told us and Mr. Elmore has pictured for us how, one night, while Heilmann was sitting by his hearth, "meditating upon the hard fate of inventors, and the misfortunes in which their families so often become involved, he found himself almost unconsciously watching his daughters combing

their long hair and drawing it out at full length between their fingers. The thought suddenly struck him that if he could successfully imitate in a machine the process of combing out the longest hair, and forcing back the short by reversing the action of the comb, it might serve to extricate him from his difficulty. . . . Upon this idea he proceeded, introduced the apparently simple but really most intricate process of machine-combing; and after great labour he succeeded in perfecting the invention." How far Heilmann's ideas clashed with those of Mr. Lister and Mr. Donisthorpe, and who was first in the field, may best be gathered from Mr. Lister's own words. Speaking at a public dinner a few years ago on trade subjects, and referring more particularly to some remarks which had been made in regard to his woolcombing inventions, he said, "I have received, perhaps, more than my fair share of credit for that machine. I have always wished to do justice to those associated with me; and Mr. Donisthorpe and myself were, I consider, the parties who mastered the difficulty, I am not jealous as to the antagonism of English inventors; but I am anxious

that Englishmen should have the credit of the invention. Some people have put Mr. Heilmann forward as the inventor of the combing-machine; but before Mr. Heilmann's patent was heard of we had succeeded in mastering all the difficulties connected with the invention. I, therefore, claim the combing-machine as well as the spinning machine, as an English invention. I do not claim it for myself; I only claim that I am entitled to a fair share of credit for its success."

There is little doubt that the adaptation of the combing-machine to the purposes of the worsted trade was mainly due to Mr. Lister. How much of the actual principle was invented by him it would be hard to say; but he not only threw out valuable ideas for perfecting it, but assisted others in every possible way to surmount the difficulties of the invention. In 1850, 1851, and 1852 many patents for improvements in woolcombing machinery were taken out by Mr. Lister and Mr. Donisthorpe, and in the last-named year they and the proprietors of Heilmann's machine got into litigation. The latter claimed that Heilmann

had patented a woolcombing-machine in England in 1846, and the verdict of the court was against Messrs. Lister & Donisthorpe. Mr. Lister, however, maintained that the machine which he and Mr. Donisthorpe had introduced was superior to Mr. Heilmann's, and in order to substantiate this effectually, he bought Heilmann's patents for woolcombing for the sum of 30,000*l.* It may be stated also that six Lancashire firms paid a similar sum for the right of Heilmann's machine for the cotton processes, and that Messrs. Marshall, of Leeds, gave 20,000*l.* for its use in the flax trade, so that the ingenious Alsatian would reap in this country altogether a sum of 80,000*l.* for his invention. Mr. Lister would naturally have relinquished the machine upon which he and Mr. Donisthorpe had spent so much time and money, had he been satisfied that Heilmann's machine was superior to it; but, instead of doing this, he simply set Heilmann's invention aside, and proceeded with increased energy to perfect his own. Ultimately Mr. Lister succeeded in producing a better machine than any that had previously been introduced to the

trade, and obtained for it almost universal acceptance. As he approached the end of his task, and even after it was fully accomplished, he became hemmed in on all sides by rival inventors, and for a few years he was put to great cost in defending his position against one and another in the courts of law.

Machine woolcombing was now an unassailable fact. The hand-woolcombers saw their trade taken from them at one stroke. There were to be no more festivals in commemoration of Bishop Blaize, their patron saint. The poor operatives were powerless. In vain did they protest that the machine-combing was inferior to the hand-combing ; the results pointed to the reverse of this. In vain did they hold meetings, and attempt to get up an anti-combing-machine agitation ; the movement never had vitality enough in it to be worth while opposing. The hand-combers' handicraft had suffered total collapse, and was altogether past praying for. Thus it came about that in the course of a short year or two there was not a hand-comber left ; all had been absorbed into other accessorial trades or had taken refuge in emigration.

Meanwhile Mr. Lister found himself at the head of a woolcombing business such as the world had never before dreamed of. He had successfully overcome all opposition, and now established himself at Manningham as a sort of woolcomber king, possessing the command of one entire branch of the worsted manufacture. The works at Manningham were enlarged, and branch establishments were set up in Bradford, Halifax, Keighley, and other places in the West Riding ; and still Mr. Lister was unable to keep pace with the demand. The ball of fortune was now at his feet, and he had nothing to do but keep it rolling. With all these concerns in full swing, Mr. Lister, as may be imagined, had his mind pretty completely occupied ; still, his ideas expanded with his business, and in course of time he started woolcombing works on a large scale in France and Germany. The money he made during the few prosperous years which now ensued must have been enormous ; but, for all that, he had his misfortunes, some of the managers at his branch-establishments, failing to perform their part of the business compact satisfactorily, en-

tailing great loss and inconvenience at times upon Mr. Lister. It was in his German speculations, and in one or two of his concerns near home, that Mr. Lister was led most astray ; but he was possessed of indomitable energy, and no matter how often those in whom he put his trust failed him, he had always courage and perseverance enough left in himself to carry him over every difficulty. The establishments which he set up in France proved ultimately to be the most successful concerns of their kind in the world. Mr. Isaac Holden (as we have previously shown) accepted the post of managing partner of these places, and worked them with great advantage ; and ultimately, in 1857, when Mr. Lister withdrew from them, Mr. Holden took them entirely upon himself, and advanced them, in coöperation with his sons and partners, to the point of preëminence which they hold at the present time. For several years Mr. Lister continued at the head of these numerous establishments in England, France, and Germany, and reaped the advantage of his invention to the fullest extent, making himself a high reputation in the world of commerce. All this time he

had not suffered the combing-machine to rest at the point at which he had made it practicable. He still directed his attention towards its improvement, as did many others, and several important additions were made to it as the years went on. One day the history of the woolcombing-machine will probably be written, and some attempt may then be made to apportion to each inventor his proper share of the merit of the invention. Nearly all the men who have helped the machine forward in any marked degree have been associated with Mr. Lister more or less; he has been, as it were, the chief controlling power. Lister, Donisthorpe, Noble, Platt, and Collier, Heilmann, Hubner, Holden—these are the names which must always stand forth as representing amongst them the creation of the woolcombing-machine in its perfected form.

Mr. Lister, however, was not content to rest upon his laurels, he did not remain satisfied with the ample fortune that his machine had brought him; he had the true inventor's instincts; no sooner had he solved one mechanical difficulty than he longed for others to

attack. Accident showed him a new world that was waiting to be conquered. Going one day into a London warehouse, he came upon a pile of rubbish which strongly attracted his attention. He had never seen anything like it before. He inquired what it was, and was told that it was silk waste. "What do you do with it?" he asked. "Sell it for rubbish, that is all," was the answer; "it is impossible to do anything else with it." Mr. Lister felt it, poked his nose into it, and pulled it about in a manner that astonished the London warehousemen. It was neither agreeable to the feel, the smell, nor the touch; but simply a mass of knotty, dirty, impure stuff, full of bits of stick and dead mulberry-leaves. In the end Mr. Lister made the offer of a halfpenny a pound for the "rubbish," and the sale was there and then concluded, the vendor being especially pleased to get rid of it on such advantageous terms.

When Mr. Lister got this "rubbish" down to Manningham, he spent a good deal of time in analysing and dissecting it, and he came to the conclusion that there was something to be done

with it. He now set himself to inquire into the exact position of the silk manufacture at home and abroad, making the fullest possible investigation. The result of this was that he found silk waste was treated all the world over as he had seen it treated in the London warehouse—as "rubbish." Mr. Lister therefore set his heart upon inventing machinery that should be able to manipulate this waste and imperfect product of the silkworm into fabrics that should vie in appearance with materials manufactured from the perfect cocoon. In this venture he was not beset by rivals, as he had been in the days when he strove to conquer the difficulties of the woolcombing-machine; he had taken a thing in hand now in which no one but himself felt the shadow of an interest, and he could work on without being haunted by the fear of some one stepping in between him and success. He engaged a number of skilled workmen from foreign countries—men well acquainted with the manufacture of silk in all its branches—and although at first they viewed their master's experiments on silk waste with suspicion and distrust, they eventually came to think with

him that there was "something in it." Mr. Lister now ceased to take the strong interest which he had hitherto done in woolcombing; he allowed the work to fall into other hands and to spread generally over the worsted district, he preserving to himself, however, the full rights and royalties of his patents. For the next ten years he applied himself heart and soul to the solving of the new problem which he had set before him, and early and late he worked at it, getting nearer and nearer to success every day. Few men would have held on as Mr. Lister did to this idea, in spite of commercial panic and weary and prolonged effort. In the crisis of 1857 loss upon loss was sustained by him; but he faced the brunt of the battle and carried himself gallantly through, not only bearing up against all this weight of misfortune, but against the enormously heavy expenditure which he was put to in regard to his silk inventions. There was much secret toil indulged in, in those days, at the Manningham Mills; the outside world knew little of what mighty schemes were there being matured. As before stated, Mr. Lister spent 360,000*l.* in

perfecting machinery for the manufacture of silk waste before he ever made a single shilling by it.

By the year 1865 Mr. Lister had accomplished his task; he had subjected silk waste to so many intricate and delicate operations, that he was able to manufacture from it velvet fabrics of great beauty. Many machines had to be invented—machines on a very gigantic scale—before the preparatory processes could be successfully mastered; and when this had been done, there was the velvet loom to bring into operation. This loom—which is the invention of Mr. Reixach, a Spaniard—gradually grew into a tangible fact, however, and it is considered to be a *majnum opus* as an invention. Mr. Lister bought this patent, and engaged the inventor's son to superintend its carrying out. It was some years after the loom got into Mr. Lister's hands, however, that it was made perfect. A power-loom for weaving velvet had been thought of before, it is true, Heilmann himself having in the early days of his inventive career brought out a loom for weaving two pieces of velvet simultaneously. It is curious to note how the lives of Heilmann and

Lister have, in the matter of mechanical invention, run largely in the same groove: in the one case, however, the inventor had a wealth of original ideas, but was wanting in the practical application necessary to insure complete success; in the other case there was not only much real inventive power, but a superabundance of energy and practical knowledge.

From a very remote period the manufacture of silk had been carried on with more or less success, but until Mr. Lister came upon that heap of rubbish in the London warehouse no one had ever been able to do anything with silk waste. From the earliest ages silk had been recognised as the most beautiful material that the eye of man had seen; the poets were never tired of singing its praises; it had a foremost place in all the pageantry and magnificence of the past; and its associations were those of rank, wealth, and beauty. The Romans of the second century esteemed a pound of silk "not inferior in value to a pound of gold," Gibbon tells us; and for centuries this exquisite material was only to be found as an adornment of the rich. Aristotle makes

allusion to the silkworm, and Pliny records the fact that silk came from Assyria, and was worked by the Greek women. In those far-back days China and Persia had the monopoly of the raw material; but in the time of Justinian silkworms were brought to Constantinople by two Nestorian monks, and by this means the silk manufacture was introduced to Justinian's subjects. The manufacture subsequently spread into Sicily, Italy, Spain, and France, and James I. made the attempt to acclimatise the silkworm in England; but neither then nor later was it possible to establish it in our humid atmosphere, and to this day we have to rely solely on foreign countries for the supply of the raw product. So, up to the seventeenth century, England only knew silk as it was imported by the mercers who used to congregate in Cheapside. Lydgate's *London Lackpenny* says :

"Then to the Chepe I began me drawn,
Where much people I saw for to stand;
One offered me velvet, silk, and lawn;
Another he taketh me by the hand."

Evidence is plentifully scattered through our early literature of the extreme favour in which silk was regarded as an article of costume. The much-

enduring Grissell of the old ballad, when she married her brutal husband, exchanged her country russet for silk and velvet, and in the first stage of her subsequent debasement

“Her velvet gown
Most patiently she stripped off,
Her kirtle of silk with the same.”

The Lady Greensleeves of the Elizabethan ballad, too, has her

“Smock of silk both fair and white,
With gold embroidered gorgeously.”

So far back as 1286 silk mantles were worn “by some noblemen’s ladies at a ball at Kenilworth Castle;” and in 1534 the fabric had grown so much in favour, that the clergy began to array themselves in it. Whittington, the nursery hero, was a dealer in silks. Silk was held in the highest regard in England all through the Plantagenet and Tudor periods, and under the rule of the Stuarts something was done in the way of introducing the manufacture of this class of goods into this country. At last, when the Edict of Nantes forced a band of exiles, who had been engaged in the silk manufacture at home, to England, and they took up their abode in Spitalfields, the manufacture of silk was perfected and established there. In course of time the trade came to hold a not un-

important place amongst the national industries. Mechanical invention was brought to its aid, as to all other textile manufactures, and the trade was considered down to 1857 to have made all the advancement that could be expected of it.

It is not a little surprising, therefore, that an entirely new development of the silk trade should have been hit upon by one who had had no connection with that manufacture. And when Mr. Lister came to take this matter in hand, the difficulties in the way of success seemed to all but himself altogether insurmountable. The silk waste which he had set his heart upon converting into attractive fabrics, and which everybody had discarded as worthless since silk had been known, was the most uninviting aggregation of rubbish it was possible to conceive. It consisted of the waste made from the manufacture of neat silk and pierced cocoons ; and, as it came to Mr. Lister, looked like mutilated ropes, dirty flocks, or mucilaginous hemp, and was knotted and sticky and choked with sticks and leaves and dead silk-worms. There were many who shook their heads discouragingly when they saw the heaps of dirty stuff which Mr. Lister had gathered round him ;

they thought the investment a bad one, even at so low a price as a halfpenny a pound. It was not one machine simply that Mr. Lister had to invent before he could bring this rough material into subjection ; he had to invent a whole series of machines, if the thing had to be dealt with at all. So he began at the beginning, and invented machine after machine, and process after process, until the silk waste was in the end transformed into rich and beautiful fabrics. He had discovered a use and created a market for the much despised rubbish, and from all the corners of the earth it now found its way to the Manningham Mills—from Persia, China, Japan, India, Italy, and elsewhere. Mr. Lister also made extensive arrangements for producing the raw material in its perfect form on an estate of his own ; he accordingly purchased an estate of 1,000 acres in Assam. It was found, however, that the difficulty of obtaining labour in that part of our Eastern dependency was so great that the idea of producing raw silk there had to be abandoned, and the estate was transformed into a tea plantation, and has been used as such ever since. More recently Mr. Lister has become possessed of extensive estates in the Punjab and

Dehra Dun, where the Assamese worm has been introduced with considerable success, and where also the Italian and Japanese worms are being largely cultivated. There are great filatures at one of these places, where it is intended to reel neat silk. The Assamese worm, it may be mentioned, does not feed upon the mulberry-tree, but upon the castor-oil plant, and produces five crops a year, the leaves of the plant remaining fresh all the year round.

It may be interesting at this point to attempt a brief description of the various processes which silk waste undergoes at Manningham Mills. Allusion has already been made to the condition in which the waste arrives at Mr. Lister's works, and the dirty unkempt appearance it has at that stage. To begin with, groups of boys are to be seen in a large room sitting upon their haunches "sorting" the waste, freeing it from the bulkier descriptions of impedimenta, and shaking it into more manageable form. From this department it is taken to the wash-house, where it is put into huge tanks, and washed and shaken with astonishing force and vigour. After this experience of soap and water, the fibre is transferred to a drying-

room, in which place it lies in limp helplessness until the wet evaporates and it assumes an aspect of comparative cleanliness. It has now to make the acquaintance of Mr. Lister's machinery, being hurried away to the drums and preparers, where it is dragged and twisted and racked in a most terrible way. At each successive stage it becomes cleaner and softer and silkier; for the ponderous drums, belts, pulleys, and teeth it has to encounter are not accustomed to work without making a marked impression. Many of the machines are exceedingly formidable monsters, and grind their teeth and roar in the most terrific manner. The preliminary processes are naturally very numerous; but at length the fibre reaches the combing-machines, and emerges from the latter a beautifully soft flossy filament. There is no doubt now as to its being convertible into lovely fabrics. It is altogether impossible to recognise in it the uncouth ill-looking stuff which was lying in heaps in the warehouse just as it came in. After the silk has left the combing-machines, it enters upon a more refined state of existence, passing successively through the hands of drawers, rovers, doublers, spinners, gassers, reelers, warpers,

spoolers, and others, until it assumes the more recognisable shapes of warp and weft.

The weaving departments at the Manningham Mills are full of interest. One shed covering an area of about 7,000 yards—the Beamsley shed—is entirely given up to the weaving of pieces. What an army of operatives one sees assembled here! They are all weaving velvet or plush, and the looms go through their operations with unerring exactitude, the shuttles flying to and fro with great speed. It is here that we see Mr. Lister's wonderful velvet-loom in active operation. Two pieces—one above the other—are woven in the same loom; and a mysterious knife glides across at each motion and effectually separates the twin pieces. There are looms of marvellously intricate formation engaged in weaving velvet ribbons; and others are employed in weaving the coarser kinds of silk into sacking, carpets, machine-cloths, &c. Everything that enters within the gates of Manningham Mills is utilised in some shape or other, a surprising variety of articles being produced in all from silk waste. The following may be enumerated by way of example: silk velvets, velvets

with a silk pile and a cotton back, silk carpets, imitation sealskin, plush, velvet ribbons, corded ribbons, sewing silks, Japanese silks, poplins, silk cleaning-cloths for machinery, bath-towels, floor-cloths, dish-cloths, and so forth. And all these from the once despised silk waste! Such a revolution in one branch of manufacture was never accomplished before by anyone. The consequence has been that silks have been greatly cheapened, and that a material which was regarded as worthless has come to have a value in the market, the price obtained for silk waste being now very greatly in excess of the original price paid by Mr. Lister.

It was no easy matter, at first, to get Mr. Lister's newly-invented silk machinery into proper working order. The "hands" had to be taught over again. Each weaver cost the firm many pounds sterling before she had mastered the loom she had under her control. Meanwhile, Mr. Lister and a skilful staff of inventors were day by day engaged in perfecting and inventing machinery; and to this day this work of improvement goes on at Manningham Mills, each year seeing a marked advance upon

the preceding one. Mr. Lister seems to be for ever on the point of bringing out another improved machine, of which the world will talk when it comes to have passed the Rubicon of the Patent Office.

The sewing-silk department at Manningham Mills is well worth inspecting. There is a very large quantity of the silk spun at these works converted into sewing-silk, and to watch the delicate threads coiling round the bobbins, under the guidance of a number of girls is to be deeply interested. Thousands of bobbins of silk thread for the sewing machine are here produced every week, black and white being the prevailing colours, although there is a good sprinkling of silk threads of warmer and more attractive colours.

In connection with the works there are dye-houses, mechanics' shops, finishing rooms, &c., all the processes connected with the manufacture of silk being begun and completed on the premises.

It will be well now to say something as to the appearance and extent of the Manningham Mills. The old works, in which Mr. Lister had

wrought out so many of his problems, were destroyed by fire on the 25th of February, 1871, the model of Mr. Lister's velvet-loom being burnt in the fire, although, fortunately, the drawings were saved. Damage to the extent of 70,000*l.* was done by this fire, and two lives were sacrificed. On the site of the old mills there then arose a new establishment, constructed on a scale of magnitude and with such attention to architectural effect as had never before been seen even in the West Riding of Yorkshire, thickly strewn as the locality was with factories of gigantic proportions. To the old site, a large tract of land was added, the entire estate occupied by the new works being not less than eleven acres. The works occupy a commanding position on the hill-side between Manningham and Heaton, and form a conspicuous landmark for many miles round. They comprise sixteen acres of flooring, and the various buildings are of stone, and are bold and massive in appearance. The cornices of the more elevated blocks of buildings are extremely striking, and the projecting portions of the premises are very picturesque in design. There

is a frontage of 350 yards to the Heaton Road, and the works extend from that point backward for a distance of 150 yards. The great portion of the space thus covered is divided into sheds. There is the Beamsley Shed, before mentioned, where the velvet-weaving is carried on; there is the Green Shed, which is largely devoted to the weaving of fancy silks; there is the Lily Shed, which is given up to the operations of combing, doubling, and carding; there is the Blue Shed, where the velvets are finished; and, in addition, there are a number of smaller sheds, where dyers, mechanics, gassers, and what not, perform their several duties. At the south-western corner of this wilderness of sheds rise up the two principal buildings of the works—the mill and the warehouse, each building being six stories in height, and each covering an area of more than 2,000 square yards. At the north end of the warehouse, and at the rear of the central shed, stands the chimney, which does duty for the entire establishment. This beacon of commerce is the sturdiest and handsomest chimney that the manufacturing districts of the North possess, and forms a prominent feature for miles

round. It is a square structure, 83 yards in height, and absorbed 7,000 tons of material in its erection. The tower of St. Mark at Venice would appear to have suggested the idea of the shaft. But the immense double cornice, which gives the crowning solidity to the chimney, shows a boldness of design that is much more imposing than the tapering belfry which surmounts the campanile of the Adriatic. All the buildings are fireproof. In every part of the interior the same massiveness of character prevails, as in the external portions. A total horse power of over 3,000 is represented by the steam engines used to run this stupendous concern, and when the works are in full operation employment is afforded for about 4,000 persons. The fact that one man has been able to establish so vast a business as this, and to adapt it solely to the carrying on of a branch of industry, of which he may be really said to be the inventor, is something to marvel at even in an age which is full of great industrial achievements. At the same time that Mr. Lister built the new mills, he planned out a large estate on the western side of the works, and there erected several

hundred cottages, which have since been occupied for the most part by people employed by him.

Mr. Lister's latest success in manufactures has been the production of plush goods, of which the world of fashion has recently become deeply enamoured. During the last few years many thousand pieces of plush, ranging in colour through all the hues of the rainbow, have been made at the Manningham Mills. Indeed, the principal portion of the supply of this class of goods in England has been despatched from Mr. Lister's establishment, although both in Yorkshire and Lancashire several manufacturers have lately entered into rivalry to some extent with Mr. Lister in this branch of industry.

Mr. Lister inherited the family estate at Manningham in 1853, and resided at Manningham Hall, the ancestral mansion, down to the year 1870. There was a park of from fifty to sixty acres attached to the mansion; and in the days when Bradford had no public park, Mr. Lister used to throw his grounds open to the people every Whitsuntide for the celebration of holiday festivities, a small charge of admission being made for the purpose of raising a fund in aid of the

charitable institutions of the town. In this way a considerable annual sum was raised, and the Manningham Park Whitsuntide galas came to be regarded as the chief outdoor attraction of the year, as many as 100,000 people assembling there at one time. When the town became possessed of a park of its own, however—Peel Park—the scene of these yearly rejoicings was transferred from Mr. Lister's grounds to the new pleasure resort, and it seemed as if the park at Manningham was lost to the public for ever. But this was not to be. When Mr. Lister removed from Manningham Hall to Fairfield Hall, near Addingham, the ancient residence of the Cunliffe family, he conceived the generous idea of putting it in the power of the town to become possessed of the park on very easy terms. His original idea had been to sell the park, which would have made a charming estate for villa residences, being well timbered and of very picturesque configuration: and with that view he had the property valued, when it was estimated to be worth 103,000*l.* When he came to the determination, however, to offer the park and mansion to the public, he consented to accept 40,000*l.* from the corporation,

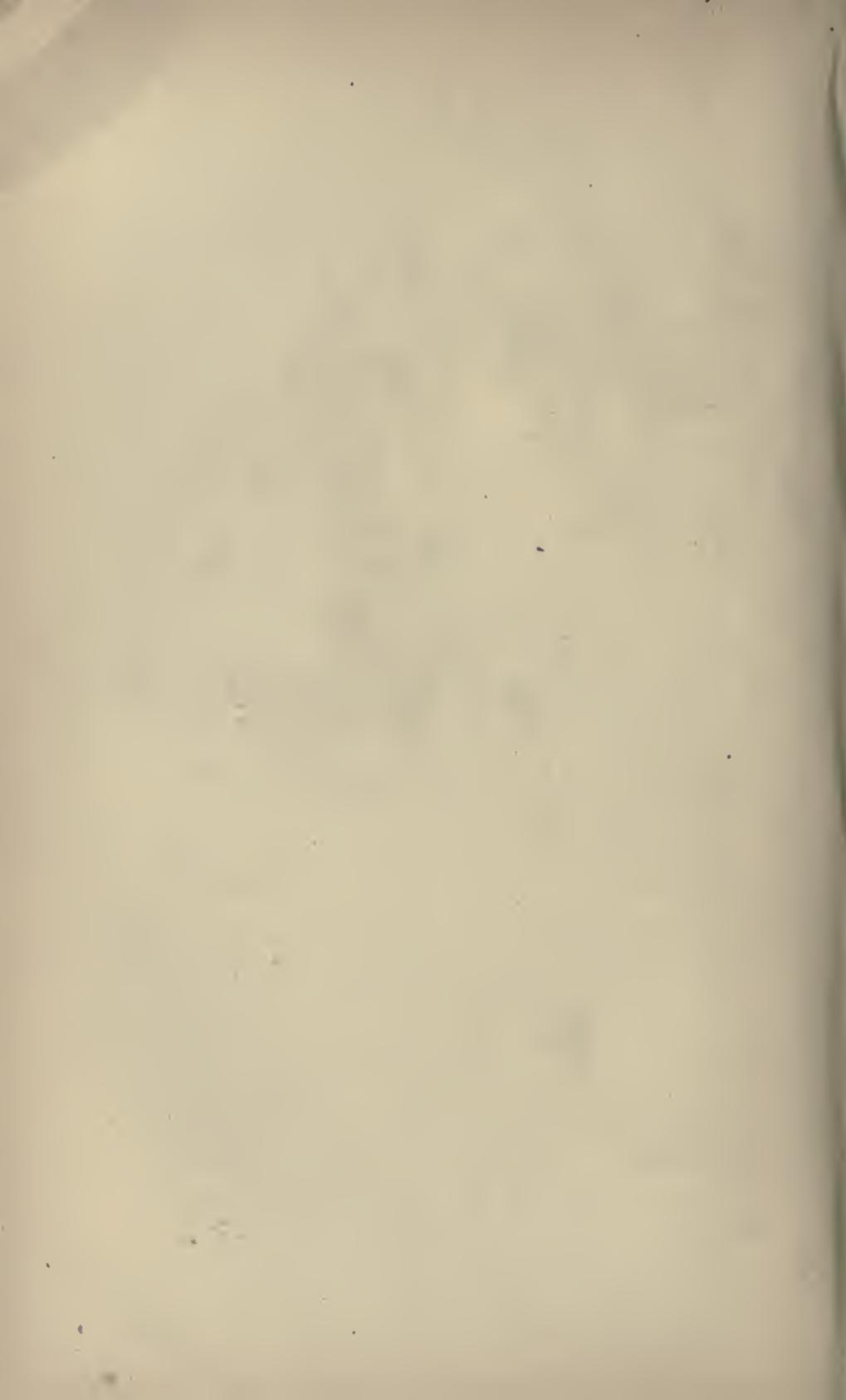
and this liberal proposal was acceded to ; and on the 28th of October, 1870, the property was formally transferred, to be held for the use of the public ; since which time it has been greatly improved by the laying-out of new roads, the construction of lakes, waterfalls, &c., and is now one of the most popular places of resort in the neighbourhood. In honour of Mr. Lister the park was officially christened Lister Park ; and it was in this place that Mr. Lister's statue was appropriately erected, being unveiled on the 15th of May, 1875.

As a public man, Mr. Lister cannot be said to have filled a very conspicuous place. All the avenues of public life were open to him when he commenced his career. A man possessed of such family influence as he had, and having no urgent obligation to engage in money-making pursuits, might have earned a public position without much difficulty. But, from first to last, Mr. Lister has been a man of business ; his inventions and his manufactures have occupied so large a share of his attention, that he has had little opportunity left for other work. Notwithstanding this, he has been a good and useful citizen, and has evinced a

lively interest in several prominent matters. On the formation of a Volunteer corps in Bradford, he was appointed lieutenant-colonel, and held the position for several years. He has been long connected with the Bradford Chamber of Commerce, and that body has often been greatly indebted to him for the lucid way in which he has laid down the position of things in regard to the working of the Patent Laws, in which, as may be supposed, he is exceedingly well versed. During the last year or two, Mr. Lister has concerned himself considerably with the questions of Free-trade and Reciprocity, having strongly advocated in public meeting and otherwise, a partial return to the old system of Protection. At the General Election of 1880 he was selected, along with Mr. F. S. Powell, to contest the Northern Division of the West Riding, in the Conservative interest, against the old members, Lord F. Cavendish and Sir Matthew Wilson, but was unsuccessful.

It is as an inventor and promoter of English manufactures that Mr. Lister will be remembered, and the work that he has done in those directions will always preserve his name prominent in the industrial annals of the nineteenth century.

THE LOW MOOR COMPANY.



THE LOW MOOR COMPANY.

N the year 1787 there died by his own hand a well-known Yorkshire squire named Edward Leeds, the last of an ancient line by whom the manors of North Bierley and Wibsey had been held from the early part of the sixteenth century. Squire Leeds was a member of the Rookes family, and lived at Royds Hall, a mansion which had been built by one of his ancestors in the reign of James I., and still exists, a fine example of the architecture of the period. Squire Leeds had changed his patronymic from Rookes to Leeds on intermarrying with the daughter and heiress of Robert Leeds of Milford ; but neither the wealth that he inherited from his forefathers nor that which he acquired by marriage served to satisfy his extravagance. He was a *bon vivant*, like many other country squires who lived in “ the good old days ” when “ George III. was king,”

and loved his horses and his dogs and his boon companions much more than he loved to look after the development of the resources of his estate. So it came about that in the year 1787 he found himself hopelessly involved in debt, and was declared a bankrupt. His creditors seized upon his manors and lands and offered them for sale by public auction ; and the squire and justice of the peace whose name had for many years been a power in the district felt unable to bear up against the disgrace which had befallen him, and put an end to his existence.

The manors of North Bierley and Wibsey were of considerable extent, and comprised many acres of low-lying moorland. It was upon this moorland that what are now known as the Low Moor Ironworks were subsequently established. But it was not given to Squire Leeds or any of his family to have part or lot in the originating of these celebrated works. Unfortunately Squire Leeds was ignorant of the vastness of the mineral treasures which lay hidden away beneath the far-stretching fields and moorland which constituted his manorial demesne, otherwise he might not only have rescued himself from the disgrace of insolvency, but have

become one of the wealthiest men in the county. The Squire was aware that there was an abundance of coal upon his estate ; for a colliery that he worked was for a long time the main source of his income, bringing him in a little short of $1,000l.$ a year. He had no conception, however, of the fact that embedded beneath his broad acres there was an inexhaustible supply of iron ore ; though had he been aware that such was the case he would probably have been lacking in the ability properly to utilise the mineral to its full advantage.

Be that as it may, the property passed beyond the control of Squire Leeds, and was twice offered for sale by public auction—once in December, 1786, and again in October, 1787—but each time was bought in, a suitable price not being obtainable. In 1788, a company which already owned some coal mines in the district made a bid for the estate and ultimately purchased it from Squire Leeds' assignees for the sum of $34,000l.$, the sale being effected by private treaty.

The original partners in this the first Low Moor Company were Mr. Richard Hird, a country gentleman of good family, who resided at Rawdon,

near Leeds, Mr. John Preston, and Mr. John Jarratt ; but shortly afterwards a rearrangement of the partnership took place, and three new partners were taken into the firm. The three new partners were Mr. Joseph Dawson, a Nonconformist minister of Idle ; Mr. John Hardy, a Bradford solicitor, and Mr. John Lofthouse, a Liverpool gentleman and probably a relative of Mr. Dawson. Mr. Lofthouse did not long remain connected with the firm, nor did Mr. Preston or Mr. Jarratt ; and ultimately Messrs. Hird, Dawson & Hardy became possessed of the entire property purchased from the assignees of Squire Leeds. It is now upwards of ninety years since the establishment of this firm of Hird, Dawson & Hardy, and the representatives of the same three families still comprise the entire proprietary of the Low Moor Company.

It was probably due more to the investigations and recommendations of Mr. Dawson than to anything else that the Low Moor enterprise was ventured upon. Mr. Dawson was an intimate friend of Dr. Priestley, and a man of high scientific attainments. He had given much attention to metallurgy and chemistry, and had watched with

keen interest the progress of scientific discovery in regard to the working of iron. He was a man of great vigour of mind and originality of character. In 1768 he had been ordained minister of Upper Chapel, Idle. He was then in his twenty-ninth year, and had just been married. His early years had been spent amidst struggle and trial. Born in very humble circumstances, he was led to make energetic efforts to educate himself, and attracted the notice of a gentleman, who generously took him by the hand and found the funds for the lad's educational training at the Daventry Academy. After leaving the academy, young Dawson was ambitious to prosecute his studies in a still higher sphere, and by the aid of a Non-conformist charity was enabled to enter Glasgow University. Upon concluding his course of study at the University he was compelled to look around for an appointment, and there being a vacancy for a minister at Upper Chapel, Idle, he accepted it, the stipend being forty pounds a year. This, it must be allowed, was hardly sufficient even in those days to bring up a family upon, with any degree of respectability, so Mr. Dawson set about devising some means of augmenting his income,

and began a private school in the village. There is a tradition that his children were so badly off for clothes that they used to run about the lanes in tattered garments and barefooted, but that is a statement that probably requires to be taken *cum grano salis*, seeing that such stories exist with regard to most self-made personages. Of one thing we may be certain, he would not be over-fastidious as to the cut of his children's costumes, and would concern himself little with the affectations of fashion, and the fact that his mind was superior to these outer details would doubtless cause his neighbours to exaggerate the humbleness of attire which would necessarily prevail in his family. Mr. Dawson did not make a successful minister; his mind was too much occupied in scientific speculation and in the promotion of his material prosperity. He established some coal mines on the hillside near his chapel, and worked them with profit. It was averred that his spiritual ministrations and his commercial engagements trenched so closely upon each other that he used frequently to be found paying his colliers their wages on the Sunday morning before service; after which he would slip into the little chapel

and read to his handful of hearers a few pages from a sermon-book that had been previously placed in readiness in the pulpit. He was a farmer as well as a colliery proprietor and minister of the Gospel. His hens were penned in the chapel graveyard, and the fodder for his cattle was stowed away in a portion of the chapel itself. Mr. Dawson's duties and engagements were, indeed, of a multifarious character, and he was looked up to by the villagers for assistance and counsel in all kinds of difficulties. He was skilled in the profession of medicine and was regularly called upon to prescribe for the benefit of his neighbours in times of sickness. It was no wonder that a man who had so many engagements apart from his ministry should find his congregation gradually dwindling. The Sunday attendance in the chapel was sometimes not more than half a dozen, and so matters went on until the Low Moor enterprise began to occupy his thoughts, when he relinquished his spiritual charge, and thenceforth was to all intents and purposes a man of business.

The partnership proved in every sense a successful one. From the wreck of Squire Leeds' fortune, Messrs. Hird, Dawson & Hardy built

up immense fortunes of their own—fortunes which placed their families in positions of affluence, and enabled their descendants to compete successfully for some of those offices of State and distinction which it is the highest ambition of an educated Englishman to fill. It would seem a singular partnership to begin with—the linking together of a Unitarian minister, a solicitor, and a country gentleman as iron-masters. But they were all men of great energy and perseverance, and the time was peculiarly favourable for the development of an enterprise of this nature. The heavy restrictions which the Legislature had placed upon the manufacture of iron had recently been considerably relaxed, several important inventions having much simplified the smelting processes and rendered it practicable to use coal instead of charcoal for heating purposes. A few years before it had been reported to the House of Commons that “if some care be not taken to preserve our timber from these consuming furnaces, there will not be oak enough left to supply the Royal Navy and our mercantile shipping.” It was little imagined that ere many years elapsed iron itself would supplant oak as a

material for building our men-of-war. But the apprehension lest the iron manufacture should absorb our supplies of wood had been subdued by the perfecting of Dud Dudley's idea of substituting coal for charcoal in iron furnaces. In addition to this, remarkable inventions and improvements had been introduced in the art of making and working iron by Henry Cort and others, and, aided by the application of Watt's "fire-engines," as steam-engines were first called, the iron trade began to assume an importance which it had never known before.

Messrs. Hird, Dawson & Hardy were fully alive to the advantages of their position, and set to work in good earnest to turn their newly-acquired treasures of coal and ironstone to profitable account. The ironstone in the locality had been known to the Romans, those conquerors of our island having had forges and made iron there ages ago ; but the full extent and value of the minerals underlying the Royds Hall estate could never have been suspected until Messrs. Hird, Dawson & Hardy came to dig and burrow in search thereof. Both the coal and the ironstone proved to be of a very superior

description. The "better-bed" seam of coal rests upon a stratum of extremely hard sandstone termed "galliard," and is from eighteen to twenty-eight inches in thickness. A seam of "black-bed" coal is met with some forty yards nearer the surface, and above, again, there comes the stratum wherein the iron-ore lies embedded in irregular layers. This ironstone yields about thirty-two per cent of iron, and the metal in its finished state is "remarkable for the peculiarity of its granular structure and uniform and brilliant grain," and commands a much higher price than the ordinary run of iron. All the "better-bed" coal upon the estate is exclusively reserved for making the Low Moor iron, the value of this now-celebrated brand of malleable iron depending in a great measure upon the superior character of the coal which is used. The Low Moor "better-bed" coal is said to contain a smaller percentage of sulphur than almost any other coal that is known.

The Royds Hall estate, as it came into the hands of Messrs. Hird, Dawson & Hardy from the assignees of Squire Leeds, was of great extent, and was of exceedingly picturesque appearance.

But the face of the landscape was soon changed when the smoke from the Low Moor furnaces began to fill the atmosphere, and when black pitch-hills and long lines of tramways were formed on every side. Several other ironworks which have since expanded into concerns of great magnitude were established about the same time that the Low Moor Company began operations. At Bowling, only a mile or two away, an iron company was started in 1789, and from that time to this the Bowling Ironworks have been famous. Richard Crawshay, another Yorkshireman, had migrated to the neighbourhood of Merthyr Tydvil, and had begun those ironworks at Cyfartha which afterwards brought him fame and fortune. Indeed, the iron trade at that time presented the best possible field for the employment of capital, energy, and skill.

As time wore on, fresh land was bought by the Low Moor Company, property after property was added, until the territorial possessions of Messrs. Hird, Dawson & Hardy extended over many miles of country, their collieries being in some instances five or six miles distant from the ironworks. At the present time an immense

network of tramways spreads on all sides round Low Moor, and represents a total length of not less than twenty-seven miles. Nine stationary steam-engines are employed in drawing the mineral waggons to and fro by means of wire-ropes, while from some of the pits the waggons have to be drawn by horses. The pits vary in depth from 30 to 150 yards. Some 2,000 persons are employed in the various mines, and in an ordinary year 60,000 tons of iron-ore will be yielded. There are about as many work-people employed in the ironworks as in the collieries, which will bring up the total number to about 4,000.

The history of the Low Moor Iron Company's enterprise is not a narrative of struggle and trial ; the proprietors have experienced the ebbs and flows which are common to all industrial undertakings—they have had their seasons of slackness and depression and their seasons of extraordinary prosperity—but the general result of their endeavours has been a success that cannot but be regarded as remarkable when we come to consider how many persons have been raised to wealth by being connected with the firm of Hird, Dawson & Hardy.

The first thing that the company did on obtaining possession of the Royds Hall estate was to erect a couple of blast furnaces on the common land at Low Moor. Mr. Smalley, an engineer from Wigan, was employed to superintend the putting up of the requisite steam-engine ; and Mr. Thomas Woodcock, who also came from Wigan, where he had erected two blast furnaces for Lord Balcarres, undertook the erection of the furnaces. The two furnaces were “blown in” on August 13th, 1791, and three days later, on August 16th, the Low Moor forgemen made their first “casting.” From that time to this the Low Moor furnaces have been a prominent feature of the district; their number has increased largely, and night and day their fitful flames are to be seen for miles round, leaping and shining weirdly amid a dense atmosphere of smoke, and the clangour of mighty hammers and the roar of giant furnaces resound with their eternal reverberations through all the surrounding country.

As the years advanced, improvement after improvement was added to the works, and the establishment extended in all directions. Ere

the second decade of the present century had passed away, the Low Moor Ironworks had become one of the largest and best known concerns in the North of England, and the partners constituting the firm had grown to be persons of high social position and importance. Reporters tell the story that on a certain occasion one of these same partners was examined before a Committee of the House of Commons, and that his statement, delivered in bluff homely Yorkshire style, that he was "a partner in the Low Moor Works," was taken down and printed in the following morning's newspaper as "a pauper in the Low Moor workhouse," to the no small consternation of the gentleman chiefly concerned.

All the partners employed themselves actively in carrying forward their business project. Mr. Dawson took up his abode in Royds Hall, the old manor-house of the lords of North Bierley, and from its mullioned windows looked out upon a scene far different from that which the former owners had looked upon from the same place. Here, Mr. Dawson continued his scientific researches, and philosophical communings;

and here he and his children used to keep treasured up the apparatus with which Dr. Priestley made his notable experiments in regard to the nature of gases. Mr. Dawson was greatly respected by the workpeople and inhabitants; he was not only diligent in superintending the business, but employed himself largely in promoting the social and moral welfare of those around him. He and his family used to proceed every Sunday to the Unitarian chapel at Bradford, with which place of worship he was connected from the time of his taking up his residence at Royds Hall to the period of his death in 1813. Frequently he was prevailed upon to occupy the pulpit there, and was always listened to with marked respect, his style of address being simple, sincere, and fervent. The esteem in which he was held is sufficiently shown by the somewhat stilted panegyric which was subsequently inscribed to his memory upon a marble tablet erected in the before-mentioned chapel. There is a true Jonsonian ring about the composition. It runs thus:

“Joseph Dawson, of Royds Hall, born the

12th May, 1740; married, the 3rd February, 1768, to Rachel Lofthouse, by whom he had two sons and four daughters; died 11th December, 1813, aged 73 years. Surrounded in his early days by many difficulties; without property, expectation, guide, or connections; he received from the beneficence of some discerning individuals, an academical education. The road to science thus opened by generosity he pursued with success; happily applied to practical purposes information resulting from study, and gradually added to extensive knowledge, reputation and affluence. But of wealth or worldly advancement he was not solicitous. In the esteem of friends, acquired by the constant performance of kind offices; in the cheerful flow of affection in his family, excited by an uniform tenderness of deportment, in philosophical researches, and the habitual contemplation of the wonderful works of God, his calm and contented mind sought its highest gratification. Taught by experience as well as meditation the high importance of just moral views, his strongest desire was to extend the pure principles of

the Christian religion. Occupied many years as a teacher of youth, and a minister of the Gospel, he strove in his school and in the pulpit with energy, with eloquence, with effect, to impress these principles. Ceasing to preach he continued to recommend them by his practice; his whole life exhibiting a pattern of the duties which that religion enjoins. This stone marks the spot where are deposited his remains. The useful works he established and promoted form his best monument, whilst the record of his virtues is engraven on the hearts of numbers comforted by his kindness, enlightened by his instruction, improved by his example."

His widow, who survived him two years, and who is alluded to as "through life his faithful and affectionate companion, deserving and enjoying his unvaried confidence," was buried in the same place. Most of their children attained to a ripe old age. Mr. Dawson's eldest son, Mr. Christopher Holdsworth Dawson, who succeeded to his father's position in the Low Moor Works and lived at Royds Hall, died in 1865, at the age of 87;

and two of his daughters reached the age of 89. Mr. Christopher Holdsworth Dawson showed himself a worthy successor of his father as a business man, and during the greater part of his long life employed himself diligently in the further development of the Low Moor Works. The Dawsons continued to occupy Royds Hall until a very few years ago, Miss Eliza Dawson, the only daughter of Mr. C. H. Dawson, being the last of the family who resided there. Miss Dawson subsequently removed to Bramhope Manor, near Otley, at which place she died in May, 1875. She was possessed of great wealth, and dispensed a considerable portion of it in the promotion of charitable objects. On one occasion she distributed upwards of 10,000*l.* anonymously amongst the local charities, and it was not until after her decease that the fact became publicly known. Miss Dawson's eldest brother, Mr. Joseph Dawson, died, aged 58, at La Chambrerie, in 1866, and was buried in the Protestant portion of the cemetery at Tours. The present representatives of the Dawson family, who are not less noted

for their benevolence and munificence than their predecessors, reside at Weston Hall, near Otley, and in the May of 1878 there were great rejoicings there on the occasion of the coming of age of Captain Dawson, the heir.

It is now time that we said something about another of the families which have acquired fame and fortune by being connected with the Low Moor Company—the Hirds. Mr. Richard Hird, the senior partner in the original Low Moor Company, resided at Rawdon, midway between Leeds and Bradford, a village which for the last hundred years has been engaged in the woollen manufacture, but which in the “olden time,” when the monks of Kirkstall held spiritual sway over this part of the valley of the Aire, formed the patrimony of the barons of Rawdon. In those days the woods of Rawdon often resounded with the din of the chase, and the Knight of Rawdon went forth with a gay cavalcade in pursuit of the deer. An old poet, whose name is now forgotten, has left us a picture of those pleasant hunting days:

“Bright is the sun, and green is every bough,
And eager is the crew, whose noisy mirth
Rings throughout Rawdon’s woods at St. John’s call.

A hunting feast is marshalled for the day :
Fairfax is there, gay Savile, Vavasour,
Old Fawkes, descended of a generous race,
And doomed his name to leave for generous sons ;
High Bellasis, of whom the peasants say
His fathers changed their lands, a witless deed,
In the old time ; the Knight of Rawdon Hall,
Rawdon de Rawdon, whose still greater son,
A prince mid princes and a knight mid knights,
Shall show such heart to shame an iron age
As Chivalry in her best day had called her own."

The Hirds were settled upon a considerable estate at Rawdon from an early part of the sixteenth century. Their seat was at a place called Buckstone, where there was a shelving rock, which at one time served as a spot of secret worship for the early Puritans of the district. Mr. Richard Hird inherited all this property, and was accounted a wealthy man. He was deeply imbued with the commercial spirit, however; and when his friend Joseph Dawson, the colliery owner and preacher, pointed out to him the great things that were to be done at Low Moor by a proper investment of capital and skill, he was not slow to espouse the project. There is little doubt that a large proportion of the 34,000*l.*, which was the amount of the original purchase-money paid by the company to the representa-

tives of Squire Leeds, would be furnished by Mr. Hird. Mr. Hird had two daughters, the eldest of whom became heiress of the Rawdon estates, and married in 1795 the Rev. Lamplugh Wickham of Low Moor House, who, pursuant to the will of his father-in-law, assumed the surname of Hird on the day of his marriage. Mr. Richard Hird's second daughter was married to Sir Charles Des Vœux.

The Rev. Lamplugh Hird was prebendary of York and vicar of Paul, in the East Riding, and not only attended to his pastoral duties, but maintained a close connection with the Iron-works. He was a magistrate and deputy-lieutenant of the West Riding, and used to hold magisterial sittings for the dispensation of justice in the Low Moor Chapel House. His first wife died in 1812, and in 1813 he married Hannah Frances, the daughter of the Rev. Lascelles Sturdy Lascelles, by whom he had one daughter. By his first wife he had nine children, and on his death in 1842 his family resumed the paternal name of Wickham, of which they had some reason to be proud; for they claimed to be descended in direct suc-

cession from the ancient house of Wykeham, two members of which had filled the episcopal chair of Winchester—William de Wykeham, founder of New College, Oxford, and Winchester College, who died in 1404 after having held the see for thirty-seven years; and William Wickham, who was successively Bishop of Lincoln and Bishop of Winchester, and died in 1595.

After the death of the Rev. Lamplugh Hird, his two sons, Mr. Henry Wickham Wickham and Mr. Lamplugh Wickham Wickham, represented their family in the Low Moor firm, and assisted with great tact and energy in the carrying forward of the commercial undertakings which had now grown to such large dimensions. The Low Moor firm had profited to a remarkable extent by the rapid development of machinery, and also by the many important contracts which they entered into from time to time for supplying the Government with implements of war. The latter branch of business, indeed, was for many years one of the principal features of the Low Moor Works; and during the Crimean War Messrs Hird, Dawson & Hardy's furnaces were

almost solely employed in smelting iron for the making of monster guns, mortars, and cannon-balls. Their gun-model room contains even to-day numerous specimens of the gigantic pieces of ordnance turned out of the works in the Sebastopol days. These objects duly commemorate the fact that Low Moor iron was extensively employed in reducing the walls of the great Crimean stronghold, and serve also as a reminder that since those days the course of things has changed somewhat at Low Moor, the Government having monopolised to a considerable degree the manufacture of the dread engines of war. Weldless railway tyres, boilers for steam-engines, sugar-pans for the West Indies, water-pipes, gigantic beams, wheels, cylinders, and heavy ironwork of all descriptions are now made at these works; and the more primitive labour of smelting, forging, tilting, rolling, slitting the precious metal into bars, sheets, and rods, is done on a very extensive scale.

Mr. Henry Wickham was drafted into the business in early manhood. He was born in the year 1800, and received his education, first at the Bradford Grammar School, and after-

wards at Oxford. With the view of fitting himself for the position to which he had been taught to look forward from his childhood, he devoted himself with great assiduity to the study of metallurgy ; and on taking his place in the counting-house at Low Moor, he was found to be quite equal to the responsibility that was reposed in him, and for many years he plodded steadily on and exercised a general superintendence over the works. In 1833 he was made a West Riding magistrate, and showed himself such an able and careful administrator, that in 1842 he was appointed chairman of quarter sessions. From that time he began to take a prominent part in the public affairs of the district, and in 1847 was put in nomination, along with his partner Mr. Gathorne Hardy (now Lord Cranbrook), for the representation of Bradford in Parliament ; but both he and Mr. Hardy were on that occasion unsuccessful. When the dissolution of 1852 took place, however, Mr. Wickham was again desired to allow himself to be brought forward as a candidate, and consented. The other candidates were General Thompson and Mr. Robert Milligan. It is worthy of remark that the present senior

member for Bradford, the Right Hon. W. E. Forster, was the proposer of General Thompson on the nomination-day. The contest was a very exciting one, and resulted in the return of Mr. Milligan and Mr. Wickham, the latter having a majority of six votes over General Thompson. Mr. Wickham continued to represent Bradford until the day of his death, which occurred in September, 1867. Mr. Wickham, although he failed to make any particular mark upon the parliamentary history of the country, was a faithful and painstaking representative, and won the confidence and esteem of all parties to such an extent that his constituents remained well satisfied with his services during the fifteen years that he sat for them.

Mr. Lamplugh Wickham Wickham was for many years the principal managing partner of the Low Moor Works, and resided at Chestnut Grove, near Tadcaster. For the long space of half a century Mr. Lamplugh Wickham was actively engaged in connection with the works, and much of the success which attended the undertaking during that period was due to the ability and energy evinced by him. He was a magistrate and deputy-

lieutenant of the West Riding; and although he never attempted to make for himself a public career, he was associated with many prominent public movements, and both as a country gentleman and a man of business has earned an honoured name. He died on January 2nd, 1883. A fountain has been erected to his memory at Low Moor, and a stained glass window in St. Mary's Church, Boston Spa, both memorials being contributed by the Low Moor workpeople.

But distinguished as the Dawsons, the Hirds, and the Wickhams have been in many ways, it has been left to the third family of Low Moor partners—the Hardys—to command the greatest amount of public attention, their connection with the Bar and the senate having in more recent times been of such an eminent character as to render their names and services familiar to the nation generally.

The John Hardy who was one of the original partners in the Low Moor Company was the grandfather of Lord Cranbrook and Sir John Hardy, and practised as an attorney in Bradford at the time that the ironworks were established, and for many years afterwards.

He was a man of great energy of character, and held important sway at Low Moor to the end of his life. In 1803, when the country was in daily expectancy of a Bonapartist invasion, Mr. Hardy organised a cyclopean regiment of volunteers at Low Moor, composed of colliers and ironworkers; and had the opportunity ever served, there is little doubt this band of heavy infantry would have made a decided impression in the field of battle. Accustomed to the sight of shot and shell in their daily labours, they regarded themselves as half soldiers to begin with, and there was much reliance placed on these stalwart fellows by the inhabitants, more especially as they had for their colonel such a gallant and indomitable gentleman as Mr. Hardy. The place where the iron regiment used to go through their military evolutions still bears the name of Soldier Green. It is interesting to note also that, although he was himself engaged in an industrial concern which had the effect of filling the air in the vicinity of the works with clouds of black smoke, he was one of the persons who, in 1793, signed a notice to a

cotton manufacturer, who proposed to erect a steam-engine at Bradford, threatening him with proceedings if he continued with his project and created a nuisance. This notice had the effect of deferring the date of the introduction of the steam-engine into Bradford for fully five years; but Mr. Hardy lived to see the dreaded machines brought into general use in the neighbourhood, and his own firm largely engaged in promoting their adoption. Mr. Hardy's practice as a solicitor extended with the extension of the iron business, and for many years prior to his death he had a very lucrative connection, holding several good appointments.

His eldest son, Mr. John Hardy (father of Lord Cranbrook), was born in 1773, and was brought up to the Bar. He succeeded to his father's share in the Low Moor Works, and the partnership made him an exceedingly wealthy man; still he remained faithful to the profession in which he had been educated, and made himself a leading position both at the West Riding sessions and at the assizes. Mr. Hardy was a fluent speaker, fervid and im-

pressive in his style, and very tenacious in argument. His success as an advocate brought him prominently into notice, and procured him the appointment of Recorder of Leeds, a post which he held for twenty-seven years. During the greater part of this period he resided with his family in the neighbourhood of Leeds; but on relinquishing the recordership removed to Heath Hall, near Wakefield. His abilities as a speaker, and his decided views on political matters, early marked him out as a proper aspirant for parliamentary honours, and in 1830 he was prevailed upon to become a candidate for the representation of Pontefract. Pontefract, however, declined the proffered alliance; and in 1832, when, by the passing of the Reform Bill, Bradford was allowed the privilege of sending two members to St. Stephen's, Mr. Hardy presented himself as a candidate for the honour of representing his native town. In those days the ceremony of nomination was the cause of great excitement, and it was the custom then and on every subsequent occasion, when a Low Moor partner had to be proposed on the Bradford hustings, for the foundrymen

and colliers of Low Moor to come down in a body to exercise their lungs and hold up their hands in support of their master. This was a matter over which the proprietors had no control; the men had always great admiration for their masters, and were not to be deterred from showing it at such times as those. Mr. Hardy was duly elected on the polling-day, in conjunction with Mr. Lister, and the old ceremony of "chairing" the members was subsequently proposed to be indulged in. The newly-elected members, however, sent their sons to represent them on this occasion; and Lord Cranbrook will doubtless still retain a lively recollection of the horse-play that the populace occupied themselves with, when the young proxies were rudely upset and the chairs broken to pieces. Mr. Hardy was reëlected—this time at the head of the poll—in 1835, and on the returning-officer declaring him and his colleague to be duly returned, he addressed the crowd in words, which might almost have been delivered by his sons, so thoroughly do they seem to represent the political views of the Hardys of to-day. He said if there was a

man who went to Parliament desirous to promote reform, to accelerate the abolition of abuses, and still maintain uninjured the venerable institutions of the country, he was the man. He was ready with any man to take the pruning-knife and lop off the excrescences of the good old constitutional tree; but he would not join any man who came with spade and pickaxe to uproot and level it with the earth. In 1837 there was another dissolution, and on presenting himself a third time before the electors of Bradford he met with a more formidable opposition than previously, and suffered defeat. In 1841, however, he was again a candidate, and on the nomination-day was escorted from Low Moor to Bradford by an immense procession, in which bands of music, flags, banners, carriages, horses, and foundrymen curiously intermingled. Mr. Hardy was on this occasion returned at the head of the poll. In 1847, Mr. Hardy retired from parliamentary life, and at the general election of that year his son, Mr. Gathorne Hardy (Lord Cranbrook), and his partner, Mr. Wickham, became candidates; but the Low Moor

element was doomed to be unsuccessful, Mr. William Busfield and General Thompson being the members elected. Mr. Hardy senior now betook himself to less exciting pursuits, and passed the remainder of his days in comparative seclusion. In 1849 he bought the Dunstall Hall estate in Staffordshire, and resided there until his death, which occurred in September, 1855, the year before Mr. Gathorne Hardy made his first appearance in Parliament. Mr. Hardy, who was eighty-two years of age when he died, had married Isabel, daughter of Mr. Richard Gathorne of Kirkby Lonsdale, by whom he had a family of twelve children, only three of them being sons—John Hardy, Charles Hardy, and Gathorne Hardy.

Mr. John Hardy succeeded to the Dunstall Hall property, and for many years had a seat in the House of Commons. He had a baronetcy conferred upon him by Lord Beaconsfield in 1876. Sir John Hardy is well known at the Low Moor Works, in which he has always taken a deep interest, and one of his sons is now actively employed as a managing partner.

Mr. Charles Hardy, Mr. John Hardy's second

son, was more intimately concerned with the ironworks than either of his brothers, however, the greater part of his life having been taken up with the business of superintending the gigantic establishment. Mr. Charles Hardy was born in 1813, and in 1837, at the age of twenty-four, he took up his abode in the neighbourhood of Low Moor, and thenceforward devoted himself with untiring assiduity to the duties of his position. For many years his time was almost solely occupied with the works; but he was a man of great benevolence of spirit, and had a deep reverence for religious matters. He resided at Odsal House during the time of his active employment at Low Moor, and from thence he proceeded every Sunday, no matter what the state of the weather or how full his house might be of visitors, to teach his class in the Sunday-school. Nearly all his spare time was given to the promotion of educational and religious objects, and he gave liberally of his wealth in support of the charitable and other institutions of the district. It was mainly due to his efforts that a scheme was set on foot for building ten new churches in Bradford, to the

cost of erecting and endowing which he was the largest contributor. He lived to see seven of the ten churches completed. The only part he took in the management of public affairs was as a magistrate and deputy-lieutenant. He was a frequent chairman of quarter sessions. Unlike his brothers, Lord Cranbrook and Sir John Hardy, Mr. Charles Hardy was of a remarkably diffident disposition, and was never more ill at ease than when called upon to speak in public. When he did speak, however, it was so evident that he spoke from the conviction and sincerity of his heart, that he was always listened to with respect. Unostentatious, kind, and considerate, he was regarded with honest affection by the Low Moor workpeople, and when he died at Chilham Castle, Kent, in 1867, the event was much deplored by all who had known him.

We now come to speak of the member of the Low Moor firm whose name stands most prominent of all in the public mind—Lord Cranbrook. He was born in 1814, and was educated at Shrewsbury School and Oriel College, Oxford, where he took a second-class in

classics, and graduated B.A. in 1836. In 1838 he married Jane, daughter of Mr. James Orr, of Holyrood House, County Down. His father destined him for the law, under the impression that his natural abilities would find more congenial occupation in advocacy than in dancing attendance upon the furnaces and forges of Low Moor. Thus it came about that Mr. Gathorne Hardy in a measure alienated himself from the celebrated ironworks from which his family's immense wealth had chiefly sprung. He paid frequent visits to Low Moor, it is true, and stayed there occasionally for a lengthened period, but he never identified himself so thoroughly with the management of the establishment as did his brothers, or as his father or grandfather had done. It was evident from the first that Mr. Gathorne Hardy was cut out for a public career. He was called to the Bar at the Inner Temple in 1840, and practised for several years. Meanwhile he paid great attention to the course of political events, and got into such high favour with his party that in 1847, on the retirement of his father, he was nominated, as has already been pointed out, as a

candidate for the representation of Bradford. On that occasion he said, "I enter the arena of political life unfettered by party ties, and with a sincere determination to use all my energies in the furtherance of national and not party objects. Believing as I do that under our present constitution civil and religious liberty is secured to all, I would, while acknowledging the necessity of progress, lay no incautious hand upon institutions under which this vast empire has been consolidated, and which though they may require modification, ought not to be subjected to organic change." His proposer described him as "a man with a heart of oak, and a chip of the old block." From that time, when he was defeated, until 1856, Mr. Gathorne Hardy made no further attempt to get into Parliament, but in the latter year he was elected for Leominster, which place he continued to represent until 1865. On Lord Derby's accession to power in 1858 Mr. Hardy was appointed Under-Secretary for the Home Department, a post which he filled until June, 1859, when his party went out of office. The turning point in Mr. Hardy's career was in

1865, when he was brought forward in opposition to Mr. Gladstone at Oxford University, and was successful in turning out the statesman by whom the University had been represented for eighteen years. Leominster did Mr. Hardy the honour at the same time of reëlecting him, but he naturally chose to sit for the University. When the Conservatives assumed the reins of office in 1866, Mr. Hardy was made President of the Poor-Law Board, with a seat in the Cabinet, and in May, 1867, he was appointed to the Home Secretaryship. The more recent events in Mr. Gathorne Hardy's career may be very briefly outlined. When the Conservatives returned to power in 1874 he was appointed Secretary for War, and subsequently held the post of Secretary of State for the Indian Department. In 1878 he was raised to the peerage under the title of Viscount Cranbrook. Two of his sons, the Hon. John Stewart Gathorne-Hardy, and the Hon. A. E. Gathorne-Hardy, have had seats in the House of Commons, the former as representative for Rye, and the latter for Canterbury; and his lordship had another son, the Hon. Harold Gathorne-Hardy,

who was a partner in the Low Moor Works, and was actively employed there as one of the resident managers. In the month of June, 1881, however, the highly-promising career of the last-named gentleman was cut short; he died at Low Moor, much regretted, at the early age of 31. On June 9th, 1883, the Harold Memorial Club was opened at Low Moor in commemoration of him by Viscount Cranbrook.

The working manager of the establishment is Mr. W. Nugent Smyth, who lives at Royds Hall. It may be mentioned also that the Hon. Harold Gathorne-Hardy, was a West Riding magistrate, as is his cousin, Mr. Lawrence Hardy, the son of Sir John Hardy.

In 1854 the Low Moor Company obtained a considerable accession to their undertaking by the purchase of the neighbouring ironworks of Bierley, which had existed from about the year 1810, having been founded by Mr. Nathaniel Aked, and subsequently carried on with great success by Mr. Henry Leah, who died in 1846 possessed of a handsome fortune, the whole of which had been acquired in carrying on the Bierley works. These works are within a short

distance of Bierley Hall, where Dr. Richardson, the famous naturalist, lived in the early part of the eighteenth century, and which has since been occupied in turn by Miss Currer, the present Sir Mathew Wilson, Mr. Henry Leah, and others. It was in this hall that Miss Currer kept her library of 20,000 volumes, the printed catalogue of which occupied five hundred pages. At the Bierley Ironworks, which have been greatly extended since their absorption into the Low Moor system, pig-iron alone is manufactured, the ore found on the Bierley estate being of the same quality as that underlying the original Low Moor estate.

The history of the Low Moor Ironworks stretches over a period of ninety years, during which time, as we have shown, the colossal establishment has been the means of giving princely fortunes to representative after representative of the three families who were the original promoters of the undertaking. It is somewhat remarkable that the business instincts and great natural abilities of the founders of these works should have been inherited so fully by their descendants, and that the partnership

should, after all these years, still remained confined to the members of those families. Low Moor will always hold a prominent place in the history of the iron industries of this country, which it has assisted so much to develop; and linked as it is with so many illustrious names, and productive as it has been of wealth, Low Moor deserves to rank high amongst the places where “fortunes in business” have been found.

SIR JOSIAH MASON.

SIR JOSIAH MASON.

AMONG men who have made themselves it would be difficult to find one who, from force of character, or from the noble and thoughtful employment of wealth gained by ingenuity and industry, is more remarkable than Sir Josiah Mason, the founder of the great Orphanage, at Erdington, near Birmingham, and of the Science College in Birmingham itself. It would be difficult also to find one who is less known to his countrymen. Even in his own town, where he had lived from early manhood, Sir Josiah Mason was but a name to most of the half million people amongst whom his life was cast. Up to middle age few persons suspected that he was rapidly acquiring wealth, and still fewer had any idea of the uses to which he proposed to put his ample means. Up to old age his name was literally unknown, even in the trade by which the bulk of

his money was obtained ; for although he was the most extensive pen-maker in the world, his pens—for the greater part of the time he was in business—bore the names of those who sold them instead of that of him who made them. Those who write with steel pens all the world over are familiar with the famous “Perryian pen ;” but of those who used this instrument, not one in a million knew that it was made, literally by the ton weight by Mason. The same may be said of the pens issued by some eminent French and other Continental houses. Though French or Belgian or German names were stamped upon them, they were produced in Mason’s manufactory in Lancaster Street, Birmingham ; and their qualities, which made them popular, were due to the improvements Mason himself introduced into the manufacture. It was much the same with the other commercial undertakings of this remarkable man. As one of the earliest electro-platers, in conjunction with the renowned house of Elkington, as a copper-smelter on a great scale, and later as one of the largest nickel-makers in the kingdom, Mason sedulously kept himself in the background ; so that even those who constantly met him in the

keen competition of business scarcely knew with whom they were competing. This characteristic of reticence and, so to speak, of self-effacement marked the whole of his life. He sought no office of public trust or distinction; he never took part in political or religious affairs; his name never figured in the management of associated commercial undertakings. His life was passed quietly, though busily, between his works and his home; and thus he was so little known that when his great benefactions began to be noised abroad, his townsmen, and even his neighbours, were struck with a strange surprise; and, ever eager to magnify the imperfect knowledge upon which it thrives, rumour began to make him out wealthier, more active, and more enterprising than he really was. Now, of course, he is widely known by means of the fame of his works and by the diffusion of his portraits; but of those who look with pride and pleasure at the lineaments of the man, not a thousandth part ever saw him in his lifetime. His one desire was quiet seclusion, freedom to do his work in his own way, relief from parade or ostentation of all kinds; his two great pleasures consisted in the acquisition of wealth by

legitimate industry, and the spending of it in labours of permanent beneficence. To enable him to do this he lived with great simplicity, liberally in fair accordance with his means—for he was no miser ; there was no trace of the niggard about him—but with a serious conviction that he was only a steward of what, in the essential piety of his nature, he believed Providence had given him to be used for the benefit of those who needed help. In this respect the character and the life of Josiah Mason are well expressed by the texts of Scripture which a true and loving friend, one who of all men knew him best, inscribed upon the simple memorial card which recorded the dates and places of his birth and death. It runs thus :

“In affectionate memory of Sir Josiah Mason, Knight, founder of the orphanage and almshouses at Erdington, and the Mason Science College, Birmingham. Born at Kidderminster, February 23, 1795. Died at Erdington, June 16, 1881.”

Then follow the texts which sum up his work and portray his character :

“I delivered the poor that cried, and the fatherless, and him that had none to help him.

“By the blessing of the Lord I profited, and filled my winepress like a gatherer of grapes. Consider that I laboured not for myself only, but for all them that seek learning.”

With these brief introductory notes, we pass to a sketch of the leading incidents of Sir Josiah Mason’s life, and to some endeavour to show the nature of the work he did, and to indicate the character of the man who did it.

Sir Josiah Mason was born on February 23rd, 1795, at Kidderminster, in a little house in Mill Street, a circumstance identified with the place, the upper part of Mill Street being now called Josiah Mason Street, to commemorate a benefaction given by Sir Josiah to the dispensary of the town. His ancestors, so far as they are known, were Kidderminster people, though there is a belief that they came originally from Coventry. But precise knowledge does not go very far back—not farther than Sir Josiah’s grandfather, a working bombazine weaver at Kidderminster, who was also a good mechanic, and was in much request as a mender of looms and other weaving and milling machinery. This Josiah Mason had an only son, also Josiah, who

was at first a bombazine weaver, then a carpet weaver, and finally a clerk to Mr. John Broom, a carpet manufacturer at Kidderminster. He married Elizabeth Griffiths, the daughter of a respectable workman at Dudley; and the second son of the couple just described was the Josiah Mason whose enterprise and whose noble employment of his wealth have combined to make him famous. There were three other children of the marriage, two boys and a girl; one of the sons died young; the other son and the daughter have now been dead for some years.

The early life of Josiah Mason was hard and unpromising. His only schooling was that obtained at a dame school, held in a cottage next door to his father's house, and this was not merely poor, but extremely brief—so brief, indeed, that at about eight years old Josiah began to work, and, characteristically enough, on his own account, for in him independence began at an early age. It was a humble line of business—that of selling cakes in the streets. When speaking in later years of this period of his life, Sir Josiah Mason used to recount with much humour, and not without a touch of honest pride, his

entrance upon “trade ;” how he held the position of a sort of middleman, going to the baker’s, and buying his cakes at sixteen to the dozen, putting them into a couple of baskets neatly fitted up by his mother, and going his rounds amongst his regular customers, with whom the little fellow became so great a favourite that they always waited for “Joe’s cakes” and rolls, and sometimes gave him a penny extra, as much probably out of kindness for the vendor as of liking him for his wares.

His next venture was more ambitious ; the cake-baskets were turned into panniers, and were strung over the back of a donkey—loftily named after Admiral Rodney, then famous for his naval victories—and Josiah Mason converted himself into a dealer in fruit and vegetables, which he carried about from door to door. So matters went on until the lad was about fifteen, when he grew tired of the trade of the streets, and began to desire more settled employment. One reason for this was that his elder brother, a confirmed invalid, needed company ; and in order that he might give him companionship, Josiah taught himself shoemaking, as a trade that could

be practised indoors. For a time this answered, but eventually it had to be given up. Josiah, true to the instincts of his nature, was too strict a stickler for quality. As he told the writer of these lines, he bought the best leather, and put into it the best work, and he humourously added, "I found I couldn't make it pay and must become a bankrupt, and so I gave it up." He now devoted himself to improving his education, and contrived to teach himself how to write; then, by acting as a letter-writer for the poor people about him, he managed to earn enough to buy a few books, chiefly of a solid kind—*theology, history, and elementary science*; novels, and light literature generally, being excluded from his course. In these studies he was much assisted by instruction received at the Unitarian Sunday-school, the well-known Kidderminster Old Meeting—formerly Richard Baxter's chapel—and afterwards he attended the Wesleyan Sunday-school, where writing was taught.

This advance in education soon had its natural effect by inducing Mason to desire some kind of settled employment, which would offer, at least, the chance of making progress in life. It was,

however, a difficult matter to settle. The one trade of Kidderminster was carpet-weaving, and this he did not greatly care for. So he tried various handicrafts, such as carpentering, blacksmith's work, and house-painting ; but none of them suited him, and at last, in despair of something better, he took for a time to his father's occupation, the carpet-weaving. He first went to this employment in 1814, when he was about nineteen years of age, and for some time practised it at the works of a Mr. Broom, at Tinker's Hill. Here he stayed for two years ; but the longer he tried it, the more distasteful the occupation grew. It was no wonder ; the labour was hard, such work as could be had was irregular—about a pound a week was the full amount of wages a journeyman could earn. As to starting as a master, that was out of the question, for a considerable amount of capital was necessary. Thus cut off from all prospect of solid advancement at Kidderminster, the young man determined to try a bold stroke by removing to Birmingham, to see if amongst the multifarious trades of the toyshop of the world there might not be one that offered an opening for

him. It was a happy resolution for himself, and, as the event proved, for Birmingham also. Nor was it such a rash proceeding as might appear at first sight; for Mason had some chance of introduction to Birmingham trade through an uncle who lived there—Richard Griffiths, his mother's brother, a clerk in one of the glass-works of the town. To this uncle, in his twenty-first year, Mason paid a Christmas visit, which decided his fate in two of the most important particulars of life. He found employment, and he fell in love. The object of his affections was his cousin, Anne Griffiths, whom he married at Aston Church on August 18th, 1817, and with whom he lived in unalloyed confidence and happiness for fifty-three years, when one of the tenderest of unions was dissolved by Mrs. Mason's death, on February 24th, 1870. To receive her remains the bereaved husband built a mausoleum in the Orphanage grounds, in the sight of his own house; and there he was himself laid beside her.

With his marriage Mason entered upon a new life in Birmingham. His uncle had entered upon business as a maker of imitation gold

jewellery — the gilt-toy trade, as it is called in the technical nomenclature of the town—but his own engagements as a clerk in the glass-works prevented him from giving personal attention to the manufacture. Consequently he entrusted the works to a partner, whom, after much difficulty, he was obliged to eject. Josiah Mason took the partner's place as a salaried manager, and by skill and industry soon brought the business into a profitable condition. As a reward he was encouraged to expect a share of it for himself; but, to his bitter disappointment, after several years' working and waiting, he was deceived. He suddenly heard that his uncle intended to sell the business. With characteristic directness Mason went straight to him to ask if this was true. He found that it was true; and so, just when he reasonably expected to realise the fruits of his labour, he found himself with only a few pounds in his pocket, wholly out of employment, and with no immediate prospect of obtaining work. To his latest years this disappointment was constant in his mind. The writer of these pages has often heard him speak of it—more, however,

in sorrow than in anger. The bitterness of it was the deception that had been practised upon him. As to material advantage, as things fell out, it was really the best thing that could have happened; for what he then regarded as a calamity opened to him the road to fame and fortune. How this came about is worth telling; and it may be well to say that the information on which the narrative is based was noted down by the present writer from Mason's own account.

It was in 1822, when he was about twenty-seven years old, that Mason left the gilt-toy business in Legge Street, with neither money in hand nor work in prospect. He was walking in the street, thinking, not over cheerfully, on what had best be done next, when a gentleman, an entire stranger, stepped up to him, and said, "Mr. Mason!" "Yes," was the answer. "You are now, I understand, without employment?" "Yes," again. "Then I know some one who wants just such a man as you, and I will introduce you to him. Will you meet me to-morrow morning at Mr. Harrison's, in Lancaster Street?" "I will," said Mason; and so they parted.

This good Samaritan proved to be Mr. Heeley, a steel-toy maker, who probably knew Mason from having seen him at Belmont Row Wesleyan Chapel, which he attended—the Heeleys, an old and respected Birmingham family, being leading Wesleyans.

Next morning, as appointed, the two met at Mr. Harrison's; and Mr. Heeley promptly opened the business by saying, “Here, Mr. Harrison, I have brought you the very man you want.” Mr. Harrison was a plain, blunt, old-fashioned man, with much of the humour which characterised his class in Birmingham. He did not close very briskly with Mr. Heeley's offer of his new-found *protégé*. “I have had a good many young men come here,” he said, “but they were afraid of dirtying their fingers.” At this, Mason, who had kept silence, involuntarily opened his hands, looked at them, and, speaking to himself rather than to the others, said quietly, “Are you ashamed of dirtying yourselves to get your own living?” It was an unstudied touch of nature; and Mr. Harrison, who had a keen insight into character, was instantly struck by it. A few inquiries satisfied

him of Mason's capacity and of his willingness to work. Before they parted an agreement had been come to, characteristic on both sides. "I have built myself a cottage," said Mr. Harrison, "and am going to live at it. I shall take my furniture out of this house; you come and live in it, and bring your furniture in."

It is now more than sixty years since this bargain was entered into, and the business of split-ring making, with a great pen trade added to it, is still continued on the same spot; for Mr. Harrison's house forms part of Sir Josiah Mason's works in Lancaster Street, now transferred to Perry & Co. Twelve months later, Mr. Harrison, desiring to retire from business, sold his trade to Mason for 500*l.*, which was paid out of the first year's profits; but though the business connection was thus closed, the intimate association between the two—fatherly on Harrison's part, filial on Mason's—continued with increasing affection until Mr. Harrison's death. Even in his own old age Sir Josiah could never speak of his early friend and benefactor—and he often spoke of him—without visible emotion. Thus, in 1824, at the age of

twenty-nine, Mason started as his own master, with an excellent and profitable trade, which he rapidly developed by his industry and inventive skill. His most important invention was that of machinery for bevelling hoop-rings. These rings were then sold at sixpence each ; and so greatly was the speed and economy of production increased by the machine, that in the first year Mason gained 1,000*l.* by the use of it. His earliest machine, constructed in 1825, is now—or was until very lately—still at work in Lancaster Street.

The split-ring trade, though it might have secured competence, could never have yielded wealth. For this something was required that should be in general and growing demand, and in the production of which machinery on a great scale could be employed. Such an opening Mason found in the making of steel pens, into which he was led by a happy accident, though, curiously enough, his friend and benefactor, Mr. Harrison, had made an essay in the same direction ; for, being an intimate friend of Dr. Priestley, and the great philosopher having complained of his inability to shape a

quill pen, Harrison, so far back as 1780, contrived to make a steel pen for him—a rather clumsy implement (one or two specimens of which are still extant) laboriously shaped and filed to a point. It was not, however, till 1825 that steel pens proper—the machine-made pens now in common use—began to be made, and sold as articles of commerce.

The first maker of these pens was Mr. James Perry, of Manchester, and afterwards of London; who, in point of time, slightly anticipated Mr. Mitchell and Mr. Gillott, respectively the earliest Birmingham makers. Perry's pens, however, differed from theirs in not being wholly machine made—the slit, instead of being formed in a press, was made by cracking the pen with a blow from a hammer, after hardening, at a place previously marked in the soft steel. The method of making the slit is the great feature of the pen trade. Slitting by machinery is the essential feature of the manufacture as now carried on; and the question of real interest in the trade is not, who was the first maker of pens of steel, but who first made pens by machinery as a mechanical process and as

articles of common use. The credit of this great improvement belongs to three persons, all of them working in Birmingham—Mr. Mitchell, Mr. Gillott, and Mr. Mason. The first named had slightly the priority in point of date. The others began about the same time, each unknown to the other, hitting upon the plan of making the slit by the press and the die instead of by means of cracking. There was, however, one considerable difference between them. The names of Mitchell and Gillott became widely known as pen-makers, while that of Mason remained obscured; for the reason that while the others dealt in pens on their own account, Mason for many years supplied to Mr. Perry all he made, and stamped them solely with Perry's name. His introduction to Mr. Perry happened in a curious way. The following account of it is transcribed from a note written by Sir Josiah Mason himself, and is therefore authentic:

“About 1829 I saw in a book-shop window in Bull Street, Birmingham (Mr. Peart's), nine slip pens on a card, marked three-and-sixpence The novelty, and the thought of Mr. Harrison's

pen, induced me to go in. Mr. Peart was writing with one of the pens. He said it was ‘a regular pin.’ I instantly saw that I could improve upon it, and offered to buy one of the pens. Mr. Peart, however, would not sell less than the whole card; but at last he consented to sell the one he was writing with, and so I bought the ‘pin’ for sixpence. I returned home, and made three pens that evening, and enclosed the best of the three in a letter, for which I paid ninepence postage. I had not the slightest knowledge of the maker; but having with difficulty made out the lettering stamped upon the pen I had purchased to be ‘Perry, Red Lion Square, London,’ I sent my letter there. This brought Mr. James Perry to 36, Lancaster Street, the following day but one, by eight o’clock in the morning; and from that moment I became a steel-pen maker. Perry & Co. were my only customers for many years. From our first interview to the present time [this was written in 1873] I have been the sole and only maker of the Persian and the steel B pens sold under Perry’s name.”

At first the pens were supplied to Mr.

Perry in modest quantities. Sir Josiah Mason's books show that in 1829 and 1830 the supplies consisted of twenty or thirty gross at a time. The first lot of one hundred gross at one order was despatched to London on November 20th, 1830. In 1831 pens to the value of 1,421*l.* were made by Mr. Mason for Mr. Perry; and from that time the trade grew with wonderful rapidity, until, when in later years his works received their full development, Sir Josiah Mason became the largest pen-maker in the world. In 1830 about twelve workpeople were employed in Lancaster Street, and one hundredweight of steel was thought a large quantity to roll for a week's consumption. In 1874, towards the close of Sir Josiah Mason's connection with the works, nearly a thousand persons were employed; the quantity of steel rolled every week for penmaking exceeded three tons, and about sixty tons of pens were constantly in movement throughout the place, in one or other of the various stages of manufacture. When the reader is told that nearly a million and a half of pens may go to a single ton,

he may form an estimate of the development the trade has received in the course of little more than fifty years.

While the making of steel pens yielded the bulk of Sir Josiah Mason's fortune, another great industry, having its origin and its chief seat in Birmingham, contributed largely to it. This was the electro-plating trade. To all the readers of this book the name of Elkington will be familiar. Some of those whose memory goes back for twenty years will call to mind the associated names of Elkington and Mason as those of the men who, united in skill and enterprise, laid the foundations of the electro-plating trade. Here, however, Sir Josiah Mason did not appear as an inventor. That distinction, in his case, is confined to the application of machinery to the making of steel pens. With electro-plating his connection was that of a capitalist and an organiser. To the Elkingtons—two brothers, George and Henry, now both passed away—is due in a principal measure the merit of bringing the process of electro-plating to perfection, and of converting it from an interesting scientific ex-

periment into the means of creating a vast and still increasing branch of industry. But Mason's share in the work was important and honourable, a rare illustration of quickness in seizing a new idea, of sagacity in realising its possibilities of development, and of courage in bringing it within the range of practical application. The experiments made by the brothers Elkington were commenced three or four years before Mason joined them. In 1838 they began electro-plating by coating metal with gold and silver by immersing them in solutions of these precious metals; and in July of the same year they patented a process of coating copper and brass with zinc by means of an electric current generated by a piece of zinc attached by a wire to the articles to be coated, and immersed in the metallic solution with them. This was the first patent in which a separate current of electricity was employed for plating purposes. But there were great difficulties encountered in the practical employment of this method. The coating could be effected, but the deposited metals failed to adhere firmly to their base. This difficulty,

which threatened to destroy the new-found art in the very hour of its birth, was overcome by the discovery made by a Birmingham surgeon, Mr. John Wright, that by the use of the cyanides of gold and silver in electro-plating a thick, firm, and permanently adhesive deposit could be obtained. This discovery was communicated to the Messrs. Elkington, was tested and established by them, and was incorporated in a new patent which they took out. Now, however, a fresh obstacle arose. Science had triumphed; the means of effecting the desired object were at the command of the inventors, their right to the use of their means was legally secured; but money was wanting to bring the invention into practical use, and to overcome the resistance of the hand-plating trade and the prejudice of the public, who were slow to believe that a film of gold and silver deposited upon another metal could be anything more than a piece of scientific legerdemain. Mr. George Elkington had been brought into business relations with Josiah Mason, and it occurred to him that Mason might consent to risk the neces-

sary capital in the new business. His conjecture was well founded. Mason examined the process, became satisfied of its capabilities, entered into partnership with the Elkingtons, and immediately poured a stream of capital into the new business. This connection began in 1844, and it lasted until 1856, just before the death of Mr. George Elkington. At first Mason intended to be merely the capitalist of the concern—a kind of sleeping partner. But this decision was in a short time necessarily changed. Originally the patentees of this new process intended only to grant licenses to work it. Nobody, however, would take out licenses. So great was the distrust, and so powerful the resistance, that it seemed as if the patent might lapse before coming into considerable use. Mason pondered the matter, and saw clearly enough what must be done to make electro-plating a success. If the trade would not take out licenses to use the process, then the patentees must fight the platers, turn manufacturers, and prove by practical illustration that the new process was destined to supplant and finally to supersede and to

destroy the cumbrous methods of hand-plating. No sooner had Mason's active mind arrived at this conclusion than he set to work to realise it. He determined to strike a great blow, and to make a powerful impression. So he planned and erected the great works and show-rooms of the firm in Birmingham, for the production of table ornaments and works of art in electro-plate. At the same time he established large works for the manufacture of spoons and forks, knowing, as he shrewdly said, that the reputation as well as the solid profit of the enterprise must rest upon articles capable of being made by the hundred thousand, and requisite for common household use. Everybody in Birmingham at that time wondered at the colossal edifice which was rising in the town, and people wise in their own conceit foresaw the ruin of the capitalist who had undertaken to build it. Some of them went so far as to warn Mason of the enormous loss he was incurring. "I certainly," he wrote to a friend, "had no idea that I could receive so much good advice from people I scarcely knew

even by name." Counsel of this kind, by no means disinterested, amused and stimulated him. He never had lost money by the bold and prudent employment of his means, and he was not going to lose it now. His reply to his would-be friends was to push on the factory and show-rooms, to open places of business in London and Liverpool, to send out agents all over the country, to engage the best workmen and the most competent artists, and in doing all this to pour out his money as freely as if it were water. It took years of labour, severe and anxious, to attain the great result which Mason had foreseen; but intelligence, courage, and enterprise at last had their certain reward. By degrees a great business was built up; and finally the Hyde Park Exhibition of 1851 gave Elkington and Mason the desired opportunity of demonstrating their triumph, and of establishing a position foreseen by both of them from the outset, and from which their house has ever since continued to advance. No more honourable chapter could be written in the history of British industry than a narrative of the creation

and the development of the electro-plating trade; and in any such narrative the record must be conspicuous of Mason's foresight, his tenacity of purpose, his courage in meeting difficulties, and his infinite resource in overcoming them.

Besides these main occupations—pen-making and electro-plating—Mason from time to time engaged in others of great magnitude. For example, in conjunction with Mr. Elkington, he established copper-smelting works at Pembrey in South Wales; and he and his partner also began the manufacture of indiarubber rings. At one period Mason was strongly tempted to enter into partnership with the great manufacturer of ordnance, Herr Krupp, of Essen, from whom he purchased important improvements in pen-making machinery at a cost of something like 10,000*l.*, and thus laid the foundations of the gigantic works now under Herr Krupp's direction. Late in life he engaged on a large scale in nickel-smelting, importing for that purpose vast quantities of ore from New Caledonia, and in this enterprise he embarked a capital which in itself constituted a handsome

fortune. Indirectly he was concerned in other businesses ; and as a further occupation, as well as a means of investment, he largely speculated in building land in and near Birmingham. Wherever, indeed, money was to be made by bold and sagacious ventures—always, however, under his own control, for he would have no foreign speculations, or any dealings with stocks and shares—Mason was prepared to make the venture and to reap the harvest. Thus by degrees—for his was not a quick success—he accumulated the wealth which enabled him to undertake the works of benevolence imperishably associated with his name. It must not, however, be supposed that Mason was a millionaire. Though he gave away nearly half a million in his lifetime, this constituted almost the full extent of his wealth. He reserved to himself only such a proportion as, in his judgment, would enable him to live on a scale of befitting comfort, would make provision for those—relatives and others—whom he considered to have claims upon him, and would in addition leave something more for the college which to his latest hour was constantly in his thoughts.

We have thus far seen how Sir Josiah Mason began life, and how he made his money. Let us now turn to the idea he had formed of duty, and the use to which he devoted his wealth. First, as to his views of duty. From an early period of his life, Mason regarded himself rather as a steward of his means than as an actual possessor. The writer has often heard him tell how, in times when he was comparatively a poor man, he used to form plans for the disposal of money for the benefit of the helpless, and how time after time he discussed with his wife—and always with her strong approval—the schemes of benevolence which passed through his mind. It was this fixed idea that led him to the contemplation of great works of an individual character, rather than to the general diffusion of his gifts through the ordinary channels of charity. He liked, in fact, to do his work himself, and to see that it was really done in his own way; and he felt that, in order to effect this purpose, he must carry out his undertakings while he continued in full health and vigour, and that he must also be content to divest himself of the funds requisite for his

purposes. When friends occasionally hinted that pretty nearly half a million was a great sum to put out of his own control, he would reply with a kindly smile and a homely proverb, "You can't eat your cake and have it." His enjoyment consisted in doing that which he wanted to do, and therefore it cost him no effort to give up the money. Such was Mason's view of duty. His conception of the kind of charitable work which it was best for him to do was equally clear. All through life he had felt a particular concern for the aged and for little children. When a mere boy himself he gave up much of his own freedom to attend upon a crippled brother, and the same kind of sympathy manifested itself steadily in later life. So far back as 1858 he made an actual commencement of his beneficent undertakings by founding at Erdington, the village where he lived, almshouses for thirty aged women and an orphanage for fifty girls. This was done so quietly that outside the village scarcely anyone knew what he was doing. There were no newspaper paragraphs, no appeal for subscriptions, no committee of management, no parade of any kind. Josiah Mason built the

necessary dwellings and provided the necessary funds, selected the persons to be admitted, and managed the joint institutions for himself. Many men would have thought it enough to assume the care and charge of a family of eighty people; but Mason's notions grew rapidly with the active exercise of benevolence, and he soon discovered that the orphanage was much too small to realise his ideal of what it should be. Having settled this point, he thought for a time of taking the public into his councils, and of asking for help in the establishment of a larger orphanage. With this view, he sought interviews with some of the clergy in Birmingham, and offered to start an orphanage fund with a donation of 100,000*l.*, on condition that the rest of the money required should be provided by subscription. But difficulties arose, chiefly on religious grounds. Mason would have no creeds or catechisms taught in his institution. He described himself as "a Christian unattached," and he desired that while the children received instruction in the principles of religion, they should not be trained in the belief of particular churches or sects. The clergy and others whom

he consulted did not see their way to work with him on these lines, and so the scheme of a public orphanage was given up. Then Mason set to work to do the thing in his own way. Accordingly, on September 19th, 1860, he quietly laid the first stone of the new orphanage at Erdington, and for eight years he patiently and steadily continued the work, until the vast building was finished, by which time (1868) he had expended 60,000*l.* upon it. Then, by a deed executed in August, 1868, he transferred the edifice, together with an endowment in land and buildings, valued at 200,000*l.*, to a body of seven trustees, to whom, after his death, the Town Council of Birmingham were empowered to add seven other official trustees by election, the founder himself, during his life, retaining the position of bailiff of the trust. Since the date above mentioned, the orphanage has been enlarged by the addition of new dormitories, a schoolroom, and a dining-hall, erected in 1874. It is now capable of receiving three hundred girls, one hundred and fifty boys, and fifty infants. This noble foundation is limited by no restriction of locality, class, or creed; it is

open to all children born in wedlock; the sole claim to admission being the necessity of the applicant, the only limitation the capacity of the building and the means at the disposal of the trustees. To the last hours of his active life, the orphanage was the object of Sir Josiah Mason's peculiar and incessant affection. He visited it daily, supervised every detail of its management, was known to every child in it, remembered and knew them all by name, and was regarded by all as a father as well as a benefactor. Nothing could be more touching than to see the little ones run up to him for a caress, slipping their tiny hands with loving trust into his hand, or receiving from him a kindly pat on the head; nothing could be more simply beautiful than to witness the pleasure which their affection inspired in him. He will be mourned by these poor orphans as the only father many of them ever knew.

While providing for so large a number of orphan children in his greater institution, Sir Josiah Mason did not abandon the smaller foundation he had previously established. On the contrary, he enlarged his almshouses for

women at Erdington; and he converted the smaller orphanage into a home for servants who had been sent out from the main foundation, and who might require a place of retreat when temporarily disabled, or a home while seeking for new situations.

It was in connection with the opening of the orphanage that the honour of knighthood was conferred on the founder. Mr. Gladstone was at that time Prime Minister, and, a statement of the circumstances of this act of large-hearted and open-handed beneficence having been laid before him, he received Her Majesty's commands to offer to Mr. Mason this honourable distinction, and letters patent for this purpose passed the Great Seal on November 30th, 1872. By special and most thoughtful permission of the Queen, in consideration of Mr. Mason's advanced age and the state of his health at the time, the ceremonies of personal knighthood and of presentation at Court were dispensed with.

We now come to the third, and in some respects the greatest, of Sir Josiah Mason's foundations: that which entitles him to rank with the promoters of learning, as the orphanage

does with the dispensers of charity. This important work is the Scientific College, given to Birmingham complete in building, finishing, and endowment, at a cost of not less than 180,000*l.*, and still further to be enriched by the posthumous benefaction of its founder. The plan of the college was resolved upon about 1868, and the foundation deed was prepared in 1870. It was necessary, however, in accordance with the requirements of the Mortmain Act, that twelve months should elapse after the signature of the deed before the conveyance to trustees could be finally effected. When the trustees were appointed, a long period was necessarily occupied in preparing the actual building plans, for which purpose Mr. Cousins, the architect selected, visited all the principal science colleges in this country and in Germany. These preparations being at last complete, Sir Josiah Mason laid the foundation-stone of the building on his eightieth birthday, February 23rd, 1875. The address he then delivered contains so much interesting autobiographical matter, and so clearly indicates the intention and the motive of the founder and the scope of his work, that it

is deserving of reproduction as an historical record which some day will possess a special value :

“ It is a matter of deep satisfaction to me that at my advanced age I am still in possession of sufficient health and strength to allow me to take this personal share in commencing the work I have so much at heart ; it fills my mind with gratitude to the Giver of all good ; and if it should please Him to allow me to see the completion of the building which we have just begun, I shall be content to depart with the confident belief that others, rightly appreciating my design, will carry out the scheme of the college in the spirit in which I have been permitted to begin it. This work, gentlemen, has been long in my mind ; for I have always felt the importance of providing enlarged means of scientific instruction on the scale required by the necessities of this town and district, and upon terms which render it easily available by persons of all classes, even the very humblest. The experience of my own life has long since satisfied me on this point. When I was a young man—it is so long ago that,

while still living in this generation, I can recall the memories of a time long past—there were no means of scientific teaching open to the artisan classes of our manufacturing towns; and those who, like myself, would gladly have benefited by them were compelled to plod our weary way under disadvantages and through difficulties of which the young men of this day can form no adequate idea. Schools at that time were few and poor, there were no institutions of popular teaching, no evening classes to which youths might go after their day's work was ended. Whatever I learned I had to teach myself in the intervals of laborious and precarious occupations, first at Kidderminster, my birthplace, and later in Birmingham, the home of my adoption and the place in which sixty years of my life have been spent. At Kidderminster, as a youth, I worked at a variety of trades—baking, shopkeeping, carpet-weaving, and others. When I came to Birmingham, in my twentieth year, I was first connected with one of the then staple trades of the town, the gilt-toy making, and it was not until after ten years of hard work and

heavy disappointment that I found the position that Providence had destined for me. At thirty years of age, with twenty pounds of savings as my whole fortune, I was brought into association with one of the most honourable, industrious, and ingenious of men, Mr. Samuel Harrison, the inventor of split-rings, whom I served for a time, and to whose business on his retirement, I succeeded. Mr. Harrison was no common man; he was a friend of Dr. Priestley, whom he assisted in many of his philosophical experiments, and for whom, I may mention, as a matter of interesting local history he made the first steel pen that ever was made in Birmingham. To me he was a dear and good friend, whose memory I have never ceased to cherish with continual affection. To the business I received from him I afterwards added the trade of steel-pen making, which I have now followed for more than forty-seven years, first as the maker of the well-known Perryian pens, and later in my own name, until I have developed the works into the largest pen factory in the whole world; though I ought to say that the building in which they are now con-

ducted no longer belongs to me, but has been conveyed to the trustees of this college as part of their endowment, so that I am now the tenant of my own foundation. This business and that of the split-ring making were my sole occupations until 1840, when accident brought me into close relations with my late valued friend and partner, Mr. G. R. Elkington, who was then applying the great discovery of electro-deposition; and through my association with him in this undertaking I may claim a share in the creation of a form of scientific industry which has so largely enriched the town of Birmingham, and increased its fame throughout the world. To this we afterwards added the establishment of copper-works in South Wales. Since the death of my friend Mr. Elkington I have restricted myself to my original work as a pen maker and split-ring maker, with an occasional deviation into other employments in which science has been brought to the aid of industry. I mention these facts to show you how the means with which God has blessed me have been acquired, and to show also how natural it is that I should wish to devote some

portion of those means to assist in promoting scientific teaching, to advance the varied forms of scientific industry with which throughout my Birmingham life I have been so closely connected. But before I could take in hand the foundation of this college I had another work to do. I had always had a great desire to do some deed of love for the poor and helpless, and therefore my first care was to make provision for the aged and the orphans. This I was enabled to do by founding the orphanage and almshouses at Erdington; and this being done, I was at liberty to turn my attention to the project of the college. There were many difficulties to be overcome. Willingness to give money will do much, but it will not do everything. The site, for example, was a great hindrance; many places were thought of and put aside; others were sought for, and could not be obtained. At last, by the willing coöperation of my friend, Mr. Philip Henry Muntz, M.P., I was enabled to obtain the land upon which we are now standing, though long negotiations were necessary before a sufficient extent could be secured. These delays, however,

did not really do any harm to the scheme; indeed, they afforded time for the proper consideration of the plan of the college and the preparation of a deed of foundation of a nature to give full effect to my wishes. For this I must acknowledge my great obligations to my friend and adviser, Mr. G. J. Johnson, and to other gentlemen, some of whom are included in the number of my trustees. At last, all difficulties being overcome, and the plans for the college being settled, we are assembled to witness the commencement of the building which I have undertaken to erect as the future home of the foundation, and before long I hope to see the first body of students collected within its walls. The scheme of the college, as most of you know, is a large one, and I have sought to make it as liberal as possible in the character and extent of the teaching, the system of management, and the mode and the terms of admission. Whatever is necessary for the improvement of scientific industry and for the cultivation of art, especially as applied to manufactures, the trustees will be able to teach; they may also, by a provision subsequent to

the original deed, afford facilities for medical instruction ; and, as has been mentioned in the address read by the Deputy-Mayor, they are authorised, and, indeed, enjoined, to revise the scheme of instruction from time to time, so as to adapt it to the requirements of the district in future years, as well as to the present time. It is not my desire to set up an institution in rivalry of any other now existing, but to provide the means of carrying further and completing the teaching now given in other scientific institutions, and in the evening classes now so numerous in the town and its neighbourhood, and especially in connection with the Midland Institute, which has already conferred so much benefit upon large numbers of students, and which I am glad to see represented here to-day. My wish is, in short, to give all classes in Birmingham, in Kidderminster, and in the district generally, the means of carrying on in the capital of the Midland district their scientific studies as completely and thoroughly as they can be prosecuted in the great science schools of this country and the Continent ; for I am persuaded that in this

way alone—by the acquirement of sound, extensive, and practical scientific knowledge—can England hope to maintain her position as the chief manufacturing centre of the world. I have great, and I believe well-founded, hope for the future of this foundation. I look forward to its class-rooms and lecture-halls being filled with a succession of earnest and intelligent students, willing not only to learn all that can be taught, but in their turn to communicate their knowledge to others, and to apply it to useful purposes for the benefit of the community. It is in this expectation that I have done my part, thankful to God that He has given me the means and the will to do it; hoping that from this place many original and beneficial discoveries may proceed; trusting that I, who have never been blessed with children of my own, may yet in these students leave behind me an intelligent, earnest, industrious, and truth-seeking progeny for generations to come."

The hope and confidence expressed by Sir Josiah Mason in the address above quoted have been already verified to a great extent. The capa-

city of the college, for example, is equal to that of the leading institutions of the same kind, and in some respects it is superior. The site allotted to it occupies rather more than an acre, having a frontage of 149 feet to one of the principal streets of Birmingham, and 129 feet to another. Of this area about 2,250 square yards are now covered with buildings of a stately character, Gothic in design, and admirable in arrangement. There are three large lecture-theatres, numerous class-rooms, workshops, museums, a series of chemical laboratories of singular completeness ; a fine library already containing nearly seven thousand volumes of standard books in all departments of science ; and a noble examination-hall, which is used for meetings and for general assemblies in connection with the college. By the liberality of the trustees, a home has been found in the building for the Birmingham Natural History and Microscopical Society, the Philosophical Society, and the Historical Society ; so that the college has already become a centre of the intellectual life of the town. The professoriate, extended considerably since the opening, now includes chairs of mathematics, chemistry, biology

physics, metallurgy, engineering and mining, geology, physiology, Greek and Latin, English, French and German ; and to these the trustees are empowered to add instruction in medical subjects, and in drawing, and indeed in whatever else may be required to make the scheme of education complete. The number of students is also satisfactory, about three hundred and fifty having entered for 1883, though the college was opened only in February, 1880, and moreover only the scientific chairs were filled during the terms for that year. Considering that Owens College, Manchester, began with fifteen students, the number attending at Mason's must be regarded as a great success. Something should be said of the principle upon which the college is based. This is one of absolute freedom. The trustees, it is true, must be "Protestants and laymen"—this the founder, by deed, declares to be fundamental—but this is the only restriction imposed. As to teachers or students, there is no limitation of birthplace or creed, nor are the students limited as to sex; women are admitted just as freely as men, and no difference whatever is made in the treatment or the instruction of the sexes. Who-

ever can teach may be employed at Mason College ; whoever cares to learn may enter there, upon terms of perfect equality. If the progress thus begun is continued, we may look forward, before many years have passed, to the college becoming the parent and the centre of a Midland University. This ultimate destiny was present to the mind of the founder and of his advisers ; and as regards buildings, teaching staff, capacity of extension, and the liberality of its endowments, the college is well fitted to aim at the measure of growth required to fit it for such a distinction.

Having now broadly sketched the work accomplished by Sir Josiah Mason, we may properly include by offering some estimate of the character and the personal qualities of a man of whom not Birmingham only, but England, may well count as amongst the most honourable and the most useful of their citizens. Sir Josiah Mason was in all respects a man of mark. He was one who, had he been differently placed and trained, might have shaped the institutions of a nation. It may seem strange to say this of a man known so little, even to his own townsfolk ; yet those who knew him intimately will admit the truth of a judg-

ment which ascribes to him the high qualities of leadership and statesmanship, though obscured by the defects of early training, and limited by the absence of wider opportunity. He had, to begin with, a strong, powerful, almost irresistible will. That which he wanted he would have, and in a great measure he did have. It was useless to argue with him when his mind was clearly set upon a particular object. It might be a small, seemingly even a trivial, matter of business ; it might be a regulation of his own life, or the lives of those about him ; it might be the creation of a new endustrial interprise, or it might be the slow and careful shaping of some great scheme of beneficence. But whatever it was, the rule applied in all cases, and with equal force. The trunk of an elephant, naturalists tell us, can be so guided in its force as to pick up a pin or to rend an oak. So it was with Mason. Little or great, all objects and purposes came within the range of his powerful will ; and whoever and whatever opposed, he surely conquered in the end. Not that he was blindly obstinate, or unwilling to take counsel. Given a real comprehension of his plans, and willingness to help them,

and he was eager to obtain the best advice and assistance he could. This was shown in the arrangements of his college, in regard to which he sought the concurrence of experts in such matters, and left the working out of the plan to them, content that his own main purpose should be fulfilled. Another great quality which he possessed—very helpful to the accomplishment of his will—was absolute patience. He knew how to wait. If the thing in hand could not be done this year, it might be done next year; if the means immediately available were not adequate, he quietly went on storing up the requisite strength. With patience there went close in union a wonderful perseverance. Mason was remarkably tenacious. He held firm to his purpose, and worked it out with never-ceasing vigilance and energy. He had also self-control, the quality which enables men to control others; and he had further that rare gift—one which is essential to the accomplishment of great purposes—that of seeing, as if by instinct, what was possible and what was outside reasonable range.

As inventor, as organiser, as a conductor of a
VOL. I.

great business, as a founder of great institutions, this saved him from dissipating his energies, kept him clear from the pursuits of mere crotchets, guarded him from that fruitless labour of beating the air, in which so many men lose their time, their means, and their influence. He had fancies, no doubt some of them curious ones; he was touched now and then with “isms” of one kind or another; but these never crossed the boundary-line of practical life. When that was reached his hard, keen, clear, and strong common sense always asserted the mastery, and firmly put aside every distracting influence and every disturbing force.

These, then, were the distinctive notes of Mason’s character—resoluteness of will, patience, self-control, marvellous energy, quick, keen, and almost unerring insight. These developed in him a faculty of organisation rarely excelled, a contempt of difficulties, and a fertility of resource, the depth and variety of which often surprised those who knew him best. By the exercise of such qualities, too, he supplied the defects of education. Though he never read very much, he knew more than many men who

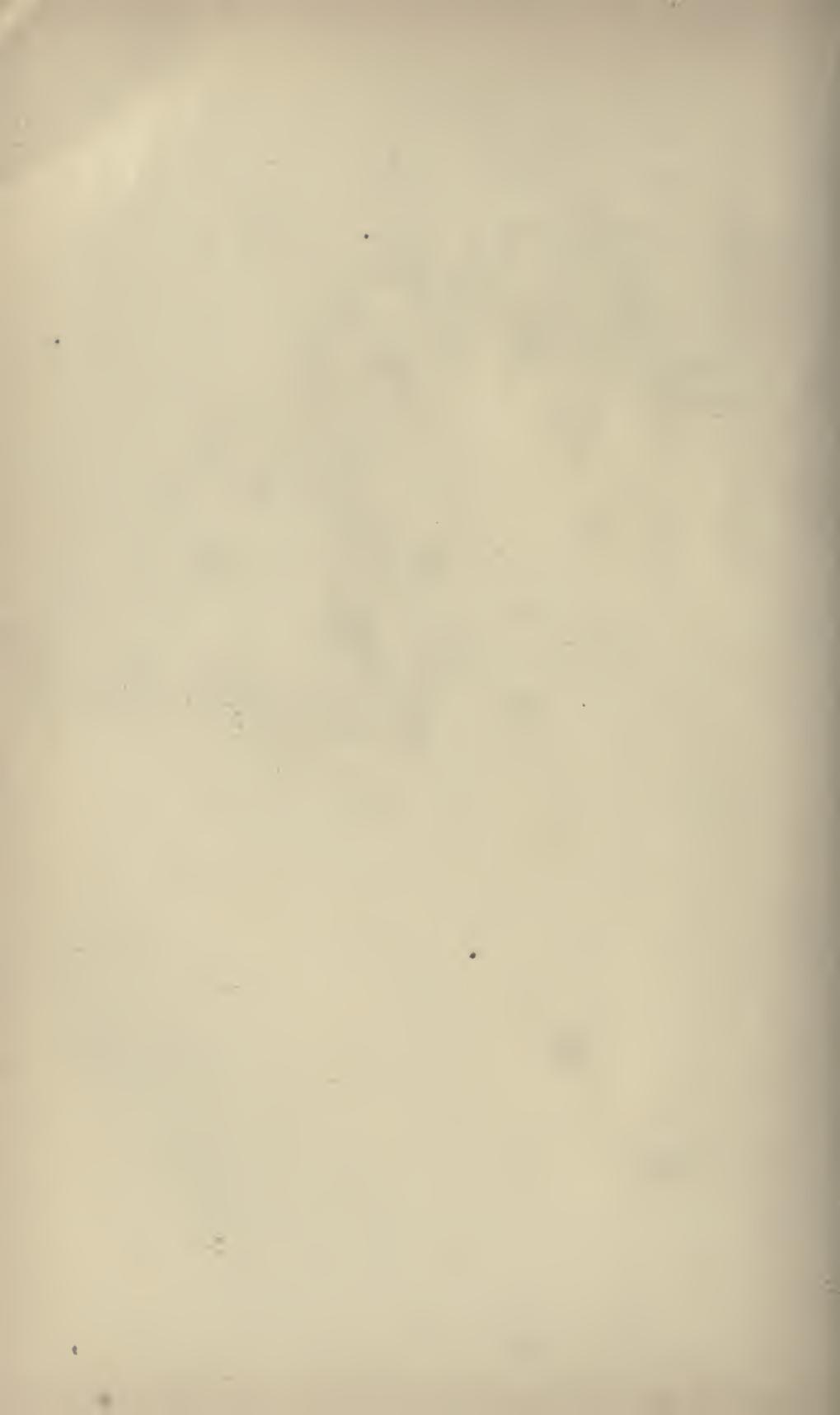
have been sedulous book-students. He went, indeed, to the sources of books, and read men instead. When an expert in any subject had laid his plans before Mason, or had disclosed to him the results of long inquiry, he found that Mason knew as much of it as he did. The manner of restating the knowledge may be quaint, or even awkward; but the knowledge itself had been thoroughly mastered and assimilated, and, so to speak, had been stored for future use. How did he apply it? In the first place, unquestionably to money-getting. He had a keen delight in making a good bargain, and it was hard to make with him a bargain that was not good for himself. Even sixpence had its value in his eyes, and it was pleasanter and more valued if he had acquired it by his own personal skill than if it had come in a mere ordinary course of profit. He delighted also in great enterprises, where the prospective gains were balanced by the attendant risks. Though careful in an extreme degree—not penurious, for he was never sordid in small things, nor was he ever a miser—he would pour into some new enterprise thousands after thousands, even

though to casual observers it might seem that the money was running into a quicksand. But he knew where the bottom was, and he had the courage and the skill to go on until he found it; and then he slowly built up a great success upon the seemingly shifty foundation. But when the success had come, and when the wealth was acquired, what then? Here the nobler side of Mason's character disclosed itself. The doing of tender works of charity for the helpless, the extension of knowledge amongst those willing to seek it, these were his aims, these the object for which he worked, and for which he desired and amassed wealth. To "deliver the poor that cried, and the fatherless, and him that had none to help him," this was one of his chief objects in life. To "labour for all them that seek learning," this was the other. Nor did he wait until old age before he began these works. Some people suppose that Mason's gifts were those of a man from whom the world was slipping away, and for whom wealth had no longer any charm. It is an error and an injustice to his memory. He was always thinking of the children. His early years were spent, so

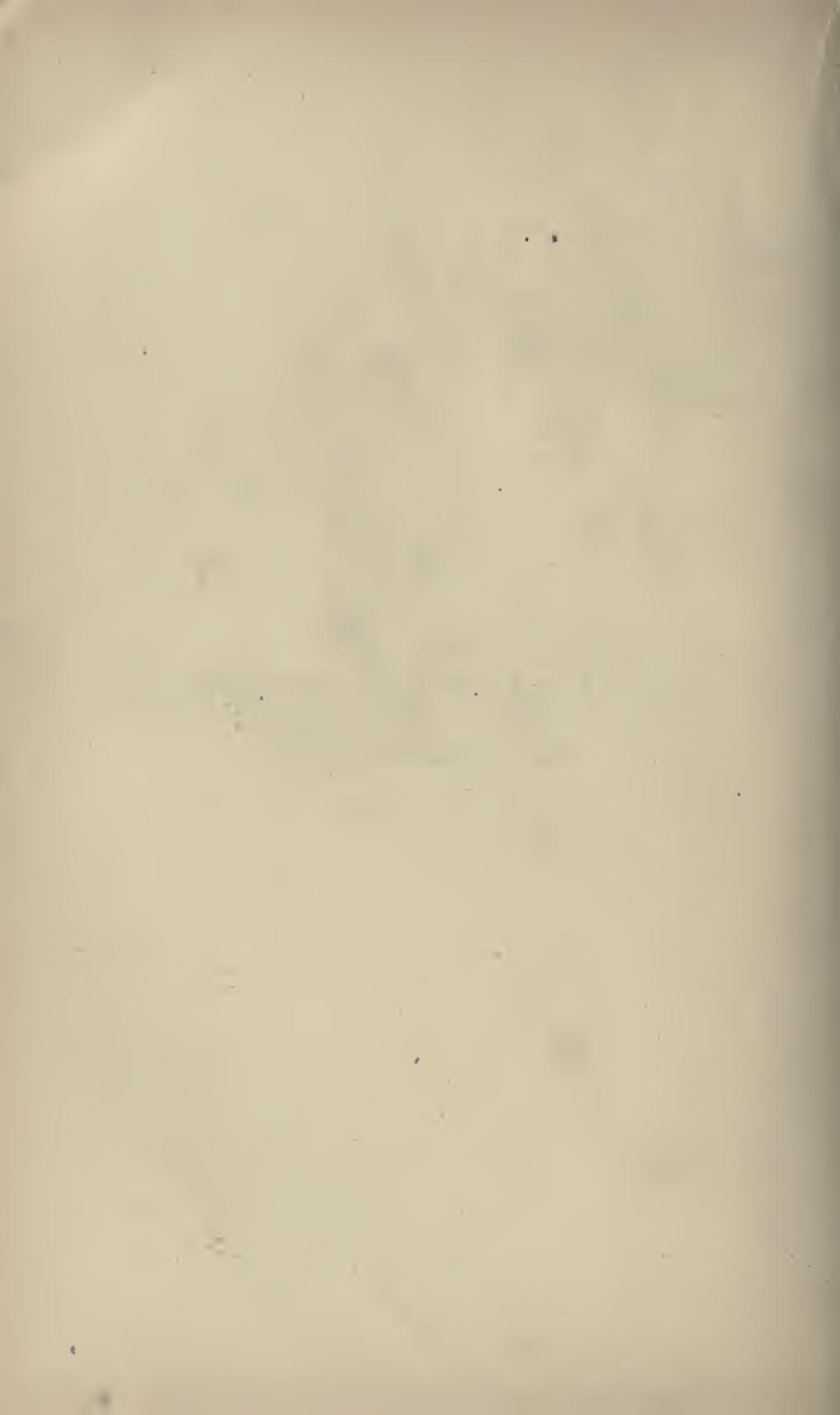
far as he could effect it, in the care of a crippled brother; in his maturer years he began not only to think of the orphans, but to provide for them. Years and years before the stately building at Erdington was reared, he had an orphanage and an almshouse for aged women established in the village at his own cost and under his own loving care; and by degrees, as means and time permitted, he extended this foundation, until it developed into the magnificent charity which will perpetuate his name for generations to come. It was very touching to see him amongst his great family of children whom he had gathered within sight of his own dwelling-place. They knew and loved him as their second father; and he knew all of them, and loved them as if they had been his own. There was a pathetic tremor in his voice when he spoke of them. He felt that they belonged to him, and they, in turn, recognised the relationship, and gave him their confidence and affection. From the moment it was begun, down to the closing hours of conscious work, the orphanage had his love; and a pure, and tender, and very noble love it was. In a different sense his college shared this feeling;

it was the object of his pride and his hopes. He felt that in founding it he had given proof of a solid and earnest love of learning ; that in endowing it he had put learning within the reach of all ; that in the wise ordination of its administrative scheme he had secured the fulfilment of his desire, and the continuance of a healthy and growing life for his foundation. That which he did not feel so much, but which those associated with him recognised as one of the noblest features of his beneficence, was that, with singular self-abnegation, he had in his lifetime divested himself of the control of the vast sums expended upon his institutions. Many men will bequeath money in great amounts, others will spend it freely, so that they may retain the power of administration during their lives ; Mason simply conceived his plans, sought out the persons whom he could trust with the conduct of them, and then, with both hands, gave away his wealth beyond all power of recall. The very house he lived in belonged to the orphanage, and he paid rent for it as an ordinary tenant. His manufactory, while he remained in business, was the property of his college.

trustees, and this also he rented at the price it would bring fairly in the market. This one fact stamps the genuine unselfishness of his character.



THE ROMANCE OF INVENTION:
SIR HENRY BESSEMER.



THE ROMANCE OF INVENTION: SIR HENRY BESSEMER.

WHAT is romance and what are knights-errant, and have we got either now? Many will be able to answer that there was an age of Arthurian romance, but that the reading of its lucubrations as a serious business was knocked on the head by Don Quixote. As to chivalry, knights and gentlemen were doomed by railways, and the last of these personages is on his way to the British Museum or Madame Tussaud's.

Such is the common belief; but who knows! Amadis de Gaul and the Four Sons of Aymon may no longer be read; but has not the Poet Laureate put new song and new life into the *Mort d' Arthur*, made artists paint its scenes and his, and given a new popular acceptance to the phantom-forms of the Round Table! Not a young lady here or in our other English world

beyond the Atlantic Sea, but has wept at the sorrows of the queens and damsels, and has made darlings of the knights, like dolls for girls out of pinafores to make love to in their daydreams.

Although St. George's Day had ceased until lately to be a living festival in merry England, although its war-cry had become dumb, and the red cross of St. George, which "braved, a thousand years, the battle and the breeze," no longer waves aloft, all is not dead. The boys here read the Seven Champions of Christendom, the English immigrants in Canada and the United States keep St. George's Day in earnestness, and they and their wives and daughters wear roses on that day, as do the Fifth Fusiliers. St. George is coming to life, and none dare say but that all the Seven Champions will soon be afoot.

Romance never died in England, it lives with the breath of the men and boys, and even of the women. Look at that young mother and her slender sister, out in the wilderness of Queensland or Natal or New Zealand or Vancouver, minding the lonely hut at home, and driving or fighting the naked or half-naked blacks, while the men are far afield. Yet these women went through

life but tamely at home; for there was no such call upon them. Shakespeare is but the echo of the trumpets of romance, and his histories on the stage are but its embodiment awaking the people even to this day.

The *Pilgrim's Progress* owes much of its popularity to its adventures, struggles, and fights with the embodied powers of darkness. To descend to the childish Jack the Giant-Killer and Jack and the Beanstalk, these have never been displaced. In the greed for such things they are sought beyond an English shape, and the *Arabian Nights* charm youth in their abridgment, and older folk in all the maturity of text and enrichment of notes, with which the great Oriental scholar Lane has endowed them. All these creations of imagination live in the popular mind in company with what is their great exemplar, Robinson Crusoe. It is idle to say Crusoe is not an historical personage, and is only a fiction, and not even a legend. Crusoe is the Englishman, even to his setting forth on his last voyage in later life.

We may, if we like, entertain a doubt whether Crusoe was really born in Yorkshire in the year

cited ; but we go on practically giving faith to all the main story. It was not that Defoe was so cunning a writer, but that we are ever ready to believe him. We may not be over-curious either about the Giant Blunderbore, or as to what order or genus of dragon St. George killed, and whether the brute was graminivorous or carnivorous ; but whatever the world may discuss, we give about as good credence to these tales as we do to many articles of our faith.

All this is no digression, but a way of getting home to facts, which we may not so readily understand if we look at them dryly, as delineated by what is called common sense, and what is often common nonsense, when offered as a representation to the body of mankind. We want our readers to contemplate the giants, dragons, magicians, and enchantments which are to be met with in this daily life of England in the nineteenth century, and what manner of men those must be who combat with them.

We understand the men who stood at bay at Rorke's Drift ; we understand the captain of the merchantman who, having seen every woman to the boats, stands on the deck as sinks the

doomed ship. All these, and the many deeds of heroism which shine in an otherwise degenerate age, we can comprehend because there is physical danger in them, and there are crowds, and there is the sudden flash of light and life. We do not bring so vividly to our minds the man in the black coat who but now passed us in the street, or who, for that matter, is our neighbour in a near house. We do not apprehend how he, at the peril of brain and life, has undergone privations and hardships and anxieties and disappointments ; how he has passed through the wreckage of life in the contest with what are truly the monstrous powers of darkness, and has come forth, like the paladin of old, the hero of his country, and the benefactor of mankind.

The cool determined courage which must man him who, in a good cause, will combat with the apathy of the learned and the vulgar, the ignorance of a government department, and the dogged obstructiveness of English law, must be in no degree inferior to those qualities which, under the charm of the poet, we accept as the highest characteristics of the brave and illustrious knight. This has been brought home to our

reflections many a time, but not the less forcibly by some passages in the life of Henry Bessemer which have latterly either come before the public or have reawakened our remembrance. He is only one of many men of his kind, though it is but seldom we get at the inner life of such, and in this case by the mere chance of controversy.

It is possible that in naming Sir Henry Bessemer it is not at all likely non-technical readers will know the force of what we mean, and yet each one has derived some personal advantage from him. There will, however, be a number who by some chance have heard of Bessemer steel ; but what Bessemer is, or rather who, whether a machine or a man, dead or alive, is another thing. There is an enormous quantity of Bessemer iron and steel all over the world, and it is quite a new thing.

Now the most common way of doing justice to this author of a great invention is to give a technical description of the iron manufacture, and to show in what the improvements consist. Beyond this may be enumerated the great benefits which this new industry has conferred on

the country, and what are our obligations to him who introduced it. This is not our intention now; but to leave the whole of these matters aside, and to accept the invention as the world has done as an acknowledged success, and to deal rather with the man in what is in effect the romance of life, not the romance of daring on the distant sea, not that which will gain the Victoria Cross in far-off battle, but the chivalric struggle against obstacles and difficulties which may and must be fought out by the mind of man even in the very midst of our homes.

The scientific papers are now ardent in the advocacy of original research, and the student who reads has before him visions of honour and glory, fellowships, professorships, honours, decorations, medals, stars, the homage of the great, the veneration of the public, and long-lasting glory, if not immortality. If, however, the student values his own peace of mind, he will think narrowly before he ventures on the quest of the Sangrail in original research, for the rarer his inventions the greater will be his peril. Few think of this and fewer know it.

What the student may do with safety and with profit is to hang on to the skirts of some popular man or accepted authority, illustrate his doctrines, but most carefully avoid correcting or confuting him. Then, by the time the doctrines of the great authority have gone their way, and lost their newness, and been found out in their untrueness, the votary of science in such wise will have acquired the honour and glory and rewards which the successful in research had yearned for, and have not got. It may be allowable perhaps, to alter the shape of the hook in a mousetrap, or to show the chemical rationale of toasting the cheese in a more recondite fashion; but woe to the man who does away with mousetraps, thwarts the mousetrap users, and spoils the trade of the mousetrap maker!

A man may flatter himself by rare examples, that by a great and successful invention he may himself succeed and realise a large fortune. There are such cases, but there are others, and one of Bessemer's predecessors, J. B. Heath, is one of them. Setting other interesting parts of his career in India and here aside, Heath invented

a cast or silver steel process, which enabled the Sheffield manufacturers to overcome their foreign rivals, and make silver steel and superior qualities of steel. Thus the price of the article was reduced twenty pounds per ton, and Heath's stipulated reward was one pound per ton out of the twenty he saved. He was fully successful, so the steel manufacturers combined to oust him of his pittance, as they said they did not see why he should take their money. Thus he was plunged in that fearful and costly litigation which characterises English law-courts, and his claim was held to be invalid, because the manufacturers had adopted an invention of Heath's own not embraced in that patent. It will be seen that Bessemer was served by the Government after the same fashion.

Heath's fortune was absorbed in experiments and lawyers' fees, and he died ruined and broken-hearted. Had he lived a few years longer, it is neither impossible nor improbable that the judges would have altered the law in another way, as from time to time they do. His case is only one out of too many.

Where Henry Bessemer was born, and when,

may be looked for in *Men of the Time*, and the biographical dictionaries. We have, however, something of his early life given by himself in reference to a vindication he was driven to make. At the age of eighteen, having been born in a small country village in Hertfordshire (on the 19th January, 1813,) of a respectable family, he came to London, "knowing no one, and no one knowing me. A mere cipher in this vast sea of human enterprise." His studious habits and love of invention soon gained a footing for him, and at twenty he found himself finishing a mode he had invented of taking copies from antique and modern basso reliefos in a manner which enabled him to stamp them on cardboard, thus producing thousands of embossed copies of the highest works of art at a small cost. Notwithstanding the trivial cost, some of these productions are to be found in the hands of curious collectors, to whom the beauty of the novel workmanship commended them. A fine medallion of George IV. is among these.

The facility with which the young Bessemer could make a permanent die, even from a

thin paper original, capable of producing a thousand copies, would have opened a wide door to successful fraud, if his process had been known to unscrupulous persons; for there is not a government stamp or the paper seal of a corporate body that every common office-clerk could not forge in a few minutes at the cost of a penny, at the office of his employer or his own home. The public knowledge of such a means of forging would at that time have shattered the whole system of H.M. Stamp Office, had Mr. Bessemer allowed a knowledge of his method to escape. Mr. Bessemer's straightforward mind leads him to speak of what would have been the consequences of his "incautiousness."

Some of our readers will here think we are leading them astray, as Sir Lancelot of the Lake is not expected to be found in a workshop; but this is quite a mistake, for a knight should be proficient in all arts useful to mankind, and necessarily in engineering. The correctness of our delineation will, however, be proved by the successive adventures and the temper of the adventurer. Some will consider

there was simplicity in Henry Bessemer; but it was the single-mindedness of a high character and of great genius above the petty arts of mean man. No sooner had the fact dawned on him of the danger to the commonwealth than he began to consider if some new stamp could be devised to prevent so serious a mischief. While so engaged he found out that the Government were themselves aware that they were losers to a great amount by the transfer of stamps from old deeds to new skins of parchment, a transfer of old lamps for new ones, to the great detriment of Aladdin.

Having got to a knowledge of the facts and how the frauds were committed, Bessemer thought that he was able to appreciate the importance of any system of stamps that would prevent so great a loss to the Government; "Nor did I," says he, "for one moment doubt that the Government would amply reward me if I were successful in so doing;" and thus would most persons, not knowing H. M. Government, also think.

After some months of study and experiment, which he cheerfully undertook, although it

interfered considerably with the pursuit of the business by which he lived, inasmuch as it was necessary to carry on the experiments in the strictest secrecy, and at night, at length he succeeded in making his stamp. He knew nothing then, he said, of patents ; and if he had for a moment have thought it necessary to make any preliminary conditions with the Government of his native country, he would at once have scouted the idea as utterly unworthy. He lives to know better ; but in his then confidence he wended his way one morning to Somerset House, and was ushered into the presence of the chief, Sir Charles Presley. Sir Charles told him that the office reckoned the loss by the frauds then perpetrated as being not less than one hundred thousand pounds per annum.

Sir Charles Presley was very much astonished at what Bessemer had shown and communicated, and asked him to call again in a few days. This he did, and Sir Charles suggested that he should work out the principle of his invention more fully, which Bessemer was very glad to do. He then produced the first perforating stamp, now so common, which could not be

transferred by fraud. The design gave great satisfaction to Sir Charles Presley and his brethren, and everything went on smoothly. Sir Charles consulted Lord Althorp, and the Stamp Office authorities determined to adopt it.

Bessemer was then asked if, instead of receiving a sum of money from the Treasury, he would be satisfied with the position of Superintendent of Stamps at some 600*l.* or 800*l.* per annum. All this showed that great care and love of economy of the first Reform Ministry, and of all ministries, Tory and Liberal; but in truth they preferred the salary, because, had they proposed to the House of Commons the payment of a sum of 5,000*l.* down to save 100,000*l.* or more yearly, their Tory opponents, in their turn, would have duly commented on the scandalous waste of public money. The proposed appointment was, however, all that he could desire, and, in the simplicity of his heart, great was his rejoicing over the prospect before him; for he was at that time engaged to be married, and his future position in life seemed thus assured.

Our lady-readers will now see that our

view of these events is correct; for here we come to the lady of the knight's love, and some of them may think of the career of the beloved of a great inventor or real man of science. How much must be her satisfaction to find as years go on the growing glory of her husband, which casts lustre on her and on their children! Even a young lady will cease to grudge the evenings to be taken away from parties and from trifles for nobler pursuits; nay, even the nights, which, as Bessemer said, "must sometimes be devoted to produce that which shall shine forth in the bright blaze of many a day." Henry Bessemer's betrothed, who was the sole confidante of his high endeavours, might well picture all these things to herself, and how, in after-years, she would share in his titles, and lean on the arm of him who was covered with the ensigns of honour his grateful country would bestow. She might think she would be invited to great gatherings, to state balls, and to state concerts with him. The fate of such a woman, who has been the sharer in her husband's anxieties, and oft-times his helpmate in his labours, is in after-times to share in his disappointments, to feel

more than he does the slights inflicted on him, to know him deprived of the reward of his own labours, and to find those who have profited by them basking in the sunshine.

As Bessemer narrates, a few days after what he deemed was the great success of their lives, he called on the young lady to whom he was engaged, and showed her the new stamp. She, who with woman's quickness had learned to watch each detail like himself, said, "Yes, I understand this; but surely, if all stamps had a date put upon them, they could not at a future time be used again without detection." This was indeed a new light, and as he owned greatly startled him; but he at the time told her the steel dies used for the purpose could have but one date engraved upon them. After a little consideration he saw that movable dates were by no means impossible, so he effected this; and he saw clearly that this plan would be most simple and efficient, far better than the elaborate scheme he had devised. He could not but confess that "while he felt pleased and proud of the clever and simple suggestion of the young lady, he saw also that all his more

elaborate system, the result of months of toil, was shattered to pieces by it."

It was not unnatural that he feared to disturb the decision Sir Charles Presley had come to; but with his strong conviction of the advantages of the new plan, he felt in honour bound not to suppress it, whatever might be the result. Thus it was that he soon found himself again closeted with Sir Charles at Somerset House, discussing the new scheme, which Sir Charles much preferred, because, as he said, all the old dies, old presses, and old workmen could be employed, and there would be but little change in the office, so little in fact that no new superintendent of stamps was required. So, after due consideration, Mr. Bessemer's first plan was definitely abandoned, the new one adopted, and in six or eight weeks an Act of Parliament was passed to carry it out.

During all the bustle of this great change, which, in the inventor's lifetime even to now, has saved at least five millions of money, and for anything we know even some millions more, no steps had been taken to instal him in office. Lord Althorp had resigned, and, as

Bessemer says, no one seemed to have authority to do anything for him. In his own words all sorts of half promises and excuses, or, in other terms, lies followed each other, with long delays between, and he gradually saw the whole thing sliding out of his grasp. The fruit of his trustfulness was this—that he could not go to law, even if he wished to do so; for he was reminded by one of the imps of romance, the lawyer to the Stamp Office, when he pressed for mere money out of pocket, that he had done all the work voluntarily, and of his own accord. The fact that the Stamp Office was profiting by his toil and outlay weighed not the least with lawyers and officials, but they added mockery and insult to injury.

Wearied and disgusted he at length ceased to waste time in calling at the Stamp Office. He was made of sterner stuff than to give way to this grievous disappointment, and in those days, the time, of which he had bestowed nine months on the service of H.M. Government, besides toil and expenditure, was precious to him, and he felt that nothing but increased exertion could make up for the loss. Thus,

sad and dispirited, and with a burning sense of injustice overpowering all other feelings, he went his way from the Stamp Office, too proud to ask as a favour what was indubitably his just right, and sought consolation with that true heart with which his life has been shared.

Though nearly half a century has since elapsed, neither H. M. Government, on either side of politics, nor the six hundred and fifty members of the Legislature have ever felt their consciences stirred to pay him one shilling or give him any acknowledgment. On the contrary, he has had more than one adventure with H. M. Government, on which, in the liberal spirit of chivalry, he has bestowed more than one boon, reaping no reward but insolence and ingratitude.

The boy beginning life had learned one lesson, which had become a necessity for his good. He kept his embossing process to himself, and to this day the secret has been carefully guarded. Further, he invented at an after-time another process of great value in the arts, which reduced the price of an article much used. This too he determined to keep a secret; so he devised that the essential part of the manufacture should

be conducted by self-acting machinery, to which no one should have access but himself. Thus, while in the outer part any common workman could be employed, he prepared an inner department. For this, having planned the machinery, he had the several parts made in three or four establishments, and when they were delivered on the premises he fitted them up with one relative privately at night.

This is one of the most remarkable incidents in the annals of industry—the fast-locked chamber, holding within its unseen and mysterious monster at work by day or by night, while the mechanics who laboured without its door, and looked on it, could not penetrate within. Even the eldest son of Mr. Bessemer had reached manhood before he ever went within the forbidden chamber or held its key.

The materials were cheap, the demand for the manufactured article steady, and a high price for it has been maintained, from which Mr. Bessemer has realised a handsome fortune, though small in comparison with the earnings of his greater inventions.

It will have been noticed that even a man so

liberal has felt it useful to his interests to conceal two inventions from the public. This is a not uncommon practice ; for the Patent Laws hitherto have been good for the lawyers rather than the inventors, and turned the hard earnings of honest industry into the coffers of the solicitor and the barrister. A great invention has too many times brought nothing but ruin to its originator ; and he who escapes the meshes of the law owes it rather to his luck than to any operation of justice, law and justice having too often no necessary connection. It is not very long ago since a case was recorded, in which a patent for an explosive largely used in mining industry, having been declared valid by a court of law, was by a higher court of law declared invalid, because the unlearned judges did not understand how they could manufacture blasting powder under the specification. Luckily the highest court decided for the validity of the patent, inasmuch as practical men had tested what lawyers did not understand.

A chemical process which can be worked as a secret is never disclosed ; for the moment it is known, patent or no patent, every rascal can

undersell the inventor, and has many chances of being abetted by the courts of law in so doing, besides the competition to which he is subjected by the foreign pirate. The consequence is serious prejudice to public interests : for invention is the fruitful mother of invention, and such practical knowledge would prompt other valuable applications.

Indeed, in England the action of the Government, as representing the community, is most unfavourable to the inventor and man of science. As the main body of society are not inventive and are not engaged in original research, they do not experience the action in their own personal fortunes. On the contrary, they do not conceive what really takes place, because so many and so distinguished are the noble acts of individuals in England that we never contemplate there can be anything wrong or rotten in our constitution. By a noble discovery or a great improvement we not only experience some actual benefit, but we all feel proud of the lustre thrown on our country. Such being our feeling, we naturally think that the public authorities, as representing us, do what is right towards those who have

rendered services to all. We believe, without looking closely, that our representatives or salaried officers gladly render every help from the public resources in aid of meritorious labours, nor can we doubt that rewards profusely distributed to some must also reach the right men.

Strangely enough, such is not the real working of our institutions; and without any covert intentions to that end, the man of merit becomes exposed to all that the ignorance, neglect, envy, jealousy, chicanery, and jobbery of mean minds can effect. It is not that the majority of our public men are so influenced; but there is a strange apathy, and for want of direct intervention their subordinates are often allowed to act a most malevolent part. The experiences of Bessemer show that the participation of great men in the Government did not obtain for him justice, gratitude, or fair play. Indeed, many of our departments are notorious for their conduct. The Admiralty has always been a laggard behind the merchant service in the adoption of improvement. It last of all took up chain-cables, iron rigging, steam-engines, screw-propellers, and iron hulls. As to the Ordnance Department,

from that it has ever been almost impossible to obtain justice, and so throughout. Even if one officer does a friendly turn, his rival or successor—and his successor is most commonly his rival—upsets all that has been done.

Hence, if a young man is either of meaner parts or wanting in the noble characteristics of a great man, early in life he arrives at a decision to follow a safer course. If, instead of distinguishing himself as a scholar, he will apply himself to teach little boys Latin grammar, he may get stipends of from four hundred to a thousand a year, and look forward to a headmastership with seven thousand. Whether the boys learn is another story. A professor is always better paid than a philosopher, and many a great man must waste valuable time in the drudgery of teaching boys and lads, in order to earn a livelihood. Much of the great work of science in all branches is done by unpaid labour at the expense and outlay of the student himself; and should any rare public appointment fall vacant in his branch, so far from getting it, he will find that it is given to some partisan jobber, or, perhaps, a minister's private secretary. The

statistical departments have been disorganized for years through a writer of political articles receiving the honours and emoluments of the direction.

Bessemer says it appears strange that he should for so many years have remained silent under the unjust treatment he had received from the Stamp Office; for these facts were only made public in 1879, and so late that few beyond himself and his wife are alive to authenticate them. The fact was, besides the time unprofitably devoted for several months to the Government service, and the cost even of the dies and of the experiments he had made not having been paid for the Government, he was well-nigh ruined on the very threshold of life. Thus it became impossible for him to take the necessary steps to force his legal claims against the Government, and in which he would have found very great difficulties in the protection insured to the prerogative of the Crown. Indeed, all his energy was necessary to recover lost ground; and he became more immersed in business, and one invention rapidly succeeded another, and happily brought with them a rich return. Thus, deeply engrossed in new under-

takings, he had no time and but little inclination to re-open what he justly calls this bitterly vexatious subject with the Stamp Office. He was, however, destined to come again in contact with his ancient enemies of H. M. Government in more than one way, but in all equally unsatisfactory to him. At the time of the Crimean war he had invented a mode of firing elongated projectiles from a smooth-bore gun, the rotations necessary to insure their proper position during flight being obtained without rifling the gun, consequently rendering all smooth-bore guns at once suitable for firing elongated shot and shell. Notwithstanding the treatment he had received, as an Englishman it was a matter of course with him to offer this plan to our Government; but though it came from a man then an accredited inventor and engineer, almost as a matter of course it was discarded without a trial.

Being shortly after in Paris at a dinner, Bessemer met Prince Napoleon, and in conversation told him of his plan for utilising smoothbore guns. The Prince was so impressed with the importance of this idea that he said he was sure his cousin, the Emperor, would be much

pleased if Bessemer would explain his invention to him, and that he would get an appointment made with the Emperor for that purpose. This was done, and Bessemer had a long and most interesting discussion with the Emperor, whom he naturally found thoroughly conversant with the whole subject of artillery.

The despot of France in the freest manner gave him *carte blanche* to make any experiments he desired at the Government establishment of Vincennes. Soon after, however, finding his presence was much required in London, he obtained another audience of the Emperor, and asked leave to make the experimental projectiles in London, and to bring them over to Paris for trial. To this the Emperor readily acceded, and as he was leaving the audience chamber, he said : "In this case you will be put to some expense, but I will have that seen to." Fancy Sir Charles Presley and his brethren saying anything of this kind ! The French Emperor, however, did not need to be reminded ; for a few days after Bessemer's return to London he received a letter from the Duke of Bassano, enclosing an autograph note from the Emperor, giving a credit on Messrs.

Baring Brothers for cost of manufacturing projectiles, but without naming the amount, leaving it absolutely to the discretion of Bessemer, in the full reliance on his honour.

What would my Lords of the Treasury or the Audit Office have said to such a document as this? And yet this is what many a private firm in London would have done—in like circumstances.

Twenty years after the Peninsular war the great victor Wellington was made to pay five thousand pounds by the Audit Office for an account of the war, for which there was not a technical voucher.

Bessemer made a great many projectiles, which were tried in his presence at Polygon at Vincennes, a few days before New Year's Day with six inches of snow upon the ground; which enabled them readily to find the projectiles on their passing through the targets. The course of these experiments was very interesting, and in them Bessemer displayed great ingenuity. He did not neglect the opportunity of proving that the confident tone in which his system had been condemned at Woolwich was entirely misplaced.

The gun used for these experiments was only a

light cast-iron one, and Commander Minié, to whom the conduct of the experiments was entrusted, said: "Yes, the shots rotate properly; but if we cannot get something stronger for our guns, these heavy projectiles will be of little service." At that time the projectiles were 30-pounders fired from a 12-pounder gun. The casual observation was the spark that has kindled one of the greatest industrial revolutions which the present century has yet to record; for it forced on Bessemer the idea that the improvement of iron for guns was a subject well worth investigation, and held out promises of important results. When iron guns were first cast at the Carron Works in Scotland in the last century the business was a very small one, and it must not be omitted that H.M.'s Government of that time did not forget to put impediments in their way. When Bessemer reported to the Emperor a few days later the results of the Vincennes experiments, he said that he had made up his mind to study the whole subject of metals specially suitable for artillery purposes. This proposal the Emperor encouraged with many kind expressions, and a desire that he might be informed of the results arrived at.

It will be of interest to the reader to learn that, according to Bessemer's statement, his knowledge of iron metallurgy was at that time very limited, so that he had to get up the whole of the subject. He is now, however, of opinion that his ignorance proved of great advantage to him, as he had very little to unlearn, and could thus approach the subject free from the bias inseparable from those who have long followed a beaten track and vainly endeavoured to get out of the rut. These words of Bessemer require, however, to be carefully considered. He does not imply that a state of ignorance would enable him to invent as many schemers imagine, who put forth crude ideas which are crushed by practical men. He set to work to learn the whole business thoroughly, first from books and then in the foundries. Still it will be seen that here was a man well on in the world, who set himself to hard learning, while many of us think that we can do very well without learning at all; or without learning any more.

To the public who thus get details at first hand, it is also of interest to know that, having built a small experimental ironwork in St. Pancras, and begun his preliminary trials, months rolled on,

and he spared neither labour nor money, but made failure after failure. To the wise man, however, failure is a way of learning, and failures are carefully recorded, first, because they show us the way how to save our time by not trying the failure over again ; secondly, because they show us, through narrowing the field, in what way we must try ; and thirdly, because they in themselves often suggest some further experiment. Bessemer, indeed, says that during this long time of failure he was accumulating many important facts which could not but ultimately be of value to him.

Thus by slow degrees the truth began to dawn upon him ; and at the end of about a year he had considerably improved the quality of cast iron, and had then cast a small model gun, which he turned and bored. The metal was almost as white as steel, and was very much tougher and stronger than the best cast iron then in use for artillery purposes. This small gun he took to Paris, and presented to his friend the Emperor, as the first-fruits of his practical studies in iron metallurgy. He says he shall ever remember with respect and gratitude the Emperor's kindly expressions when accepting it. It is a thing to ponder

on that a usurper should be thus regarded, while the government of a free country heaps on itself contempt and hostility. It may be that, where party government prevails, principle is little regarded, while despotism must secure itself against public opinion. The most energetic English Government perhaps that ever existed, except the Commonwealth, was that of the company of merchants which ruled the East Indies, but that was in truth a despotism. As to the United States, they are not worse than the mother country; for recently, by a party vote, they have displaced one of the finest scientific establishments they have to boast of. Under a free government national vanity may sometimes foster a noble design, but the fears of the despot keep his conscience in a tenderer state.

On his return from Paris, Bessemer followed up his experiments with greater ardour than ever, for he became convinced he was on the eve of producing the quality of metal more suitable than any other. Furnace after furnace was pulled down and rebuilt, new and improved machinery and apparatus were invented and constructed at a great expense, and several new patents were taken

out, so as to secure each step in advance. Thus even the then handsome resources of Bessemer were weakened by these prolonged and fearfully expensive experiments, which were by this time necessarily conducted on a manufacturing scale, but without return, and not as mere laboratory experiments. He and his wife saw the results of their past years' labour going in this way, and that they were returning to an earlier condition of their lives. They bore it, however, cheerfully, for Bessemer now saw the great fact that the refinement of iron in the fluid state might go on until pure malleable iron or steel could be obtained. He had thereby got to a further stage, for he knew that such a result in its importance went infinitely beyond that for which he had been striving, an ordnance metal.

How many a squire will spend on a pack of hounds or on a stud of race-horses, and how will a bankrupt duchess bestow on an evening entertainment to a crowd of idlers for which not a wreck will be found on the morrow, sums which in any department of science would yield results of lasting utility. Here, however, were a man and his wife—for the wife had been partner in every

toil of life—bestowing their earnings and savings on what was for the good of their country, but might yield them no more than a ball does to a duchess, perhaps only faded flowers and the memory of regret.

At this time of his life Sir Henry Bessemer devoted himself exclusively to his iron experiments, and had greatly neglected his professional business for some two years and a half. Although he had a valued partner, Mr. Robert Longsdon, he considered the state of business was not fair and he offered to withdraw altogether from the partnership, or to give him a share of a fifth of the new patents. Fortunately for Mr. Longsdon he was as freeminded as Mr. Bessemer, and he took the well-meant offer. Meanwhile Bessemer went on; and in August, 1856, he felt justified in reading a paper before the British Association “on the manufacture of malleable iron and steel without fuel.”

The whole iron trade of England was startled by the facts set forth in this paper, backed by samples of the work. Many of the leading men in the iron trade came up forthwith to London in great haste, fearing he might make some exclu-

sive bargains with a few firms for the working of his invention. With a full knowledge that as yet there had been no commercial working of the process, yet as a sort of insurance against a possible monopoly, they took licences on the favourable terms then offered. Thus no less than 27,000*l.* was brought in within thirty days of his reading his paper at Cheltenham. These licences Bessemer afterwards bought back for 31,500*l.*, giving fresh licences in their stead.

The consequences of this eagerness were very noteworthy: numerous temporary experimental trials were made in different parts of the country with various qualities of pig-iron, showing that most of them could not be successfully worked with the new process. No sooner was this found out than an extraordinary revulsion of feeling showed itself in the iron-trade, and perfect distrust of the invention became universal. The public press, which had at first spoken of it in such glowing terms, now doomed it as impracticable, and spoke of it as "a brilliant meteor that had flitted across the metallurgical horizon, dazzling a few enthusiasts, and then vanishing for ever in total darkness."

Although Bessemer knew he was in the right way, he knew too this was no time to argue the question with the iron-masters ; words were of no avail, so he set earnestly to work to try and overcome the difficulty which had so unexpectedly arisen, and that was no easy task. All the old investigations had to be gone over again, experiments had to be made on a much larger scale, with greater and more powerful machinery. To add to the trouble, as the difficulties had reference more to chemical than to mechanical questions, so a laboratory was fitted up, and the services of a professor of chemistry were engaged at a high salary.

Sir Henry Bessemer owns that the very large scale on which these operations were carried out involved a very heavy outlay in various ways ; but there was no slackening of exertion, no cessation of the severe mental and bodily labour. In this way another long and weary year had passed, and but little real progress had been made towards the removal of the difficulty. Many new paths had been struck out, but they had led to no practical results.

He worked steadily on. Six months more of

anxious toil had glided away, and things were much in the same state, except that many thousands of pounds had been uselessly spent, and he was much worn by hard work and mental anxiety. The time had now come, to use his own words, when the large fortune that was almost within his grasp seemed then far off. His name as an engineer and inventor had suffered much by the defeat of his plans. His best friends tried, first by gentle hints, and then by stronger arguments, to make him desist from a pursuit that all the world had proclaimed to be utterly impossible. He owns it was a hard struggle, and he had well-nigh learned to distrust himself, and was fain at times to surrender his own convictions to the mere opinion of others. Those most near and dear to him at length grieved over his obstinate persistence ; but, as he says, what else could he do, for he had irrefragable evidence of the absolute truth and soundness of the principle on which his invention was based. With this knowledge he could not persuade himself to fling away the promise of wealth and fame, and lose entirely the results of years of labour and mental anxiety, and at the same time own himself to be beaten and defeated.

His courage held on, and happily for him the end was near ; and in a few more months he had fully succeeded in producing steel worth 50*l.* to 60*l.* per ton from charcoal pig-iron, which had cost him only 7*l.* per ton ; the conversion of the crude iron into steel being effected by simply forcing minute streams of cold atmospheric air through it for the space of fifteen minutes—so plain was the ultimate process after years of toil. Thus was he able to boast that the so-called fallacious dream of the enthusiast had been realised to its fullest extent, and it was now his turn to triumph over those who had so confidently foretold his failure. He could then see in his mind's eye, at a glance, the great iron industry of the world crumbling away under the irresistible force of the facts so recently elicited. The ingenuity and skill of a hundred and fifty years in building up the English iron trade were as naught ; for homogeneous steel was to become the material for the construction of our ships and our guns, our viaducts and our bridges, our railways and our locomotives, and the thousand and one things for which iron had theretofore been employed.

He straightway took a few hundredweight of

these new steel bars to the works of his friends, the Galloways, at Manchester, and unknown to their workpeople these bars were given out for all the purposes for which steel had been used. So identical was the new steel, that during two months the workmen had not the smallest suspicion they were not using steel of the best mark, costing 60*l.* per ton.

Even after this not one of the large steel manufacturers of Sheffield would willingly adopt his process, though each one was ready to accept for himself an absolute monopoly of the invention, and then perhaps have shut it up. Bessemer, who had foreseen this, was driven to set up steel works of his own in the midst of Sheffield, and to undersell them in their own market. Thus were established the first Bessemer steel works, open to the inspection of the manufacturers, and from which steel was produced and sold 10*l.* to 15*l.* per ton below their prices. It is not unnatural that Bessemer should congratulate himself and his new partners on having escaped that rattening with a bottle of gunpowder in the furnace-flues, for which Sheffield men have made themselves so disgracefully known. The reason he gives is the absolute

disbelief of both masters and men that Bessemer could compete with them. It was this disbelief, however, that in the end lost Sheffield its old monopoly of the steel trade of the country, for the process was adopted in all the great iron districts.

Fourteen years afterwards these experimental works were sold for exactly twenty-four times the whole subscribed capital of the firm, after returning fifty-seven fold. Therefore the whole return in fourteen years was eighty fold, or cent per cent every two months, more than a gigantic Californian silver mine.

His old acquaintances in the Government were kept fully informed of what he was about; for the late Colonel (afterwards General) Eardley Wilmot visited Sheffield on their behalf, and made himself master of the process. So far as he was concerned, he always behaved straightforwardly.

In May, 1859, Bessemer read a paper on his invention at the Institution of Civil Engineers. By this time the process had spread into Sweden and France.

Woolwich, however, held to its reputation as the enemy of inventors. In consequence of an

experiment there, the success of which could not be denied, Bessemer was requested to send in a tender and estimate for the cost of the necessary converting apparatus for making steel for ordnance at a cost of 6*l.* or 7*l.* per ton. One of the usual changes at Woolwich took place—Colonel Wilmot was superseded.

Bessemer finding matters going wrong appealed to the late Mr. Sidney Herbert, who at length very coolly stated that he had consulted Mr. W. G. Armstrong, who had said Bessemer's iron was wholly unsuited for the purpose. Is it to be wondered at that Bessemer could hardly believe his own ears ; Mr. Armstrong being the proposer of a rival scheme for making guns of coiled iron bars ; and the two methods of forming the gun not being able to bear comparison, still less a competitive trial ? Bessemer thought that the Newcastle manufacturer well provided for his own interest in the advice he gave, for he was at once promoted to office with a large salary, and honoured by knighthood at the outset in 1859, receiving the profits of large orders executed for Government at his own works at Newcastle.

Bessemer of course was shunted, although Sir

William Armstrong was forced to adopt steel for the foundation and core on which his gun was built. This was a practical answer to the affirmation that steel was wholly unsuited for Woolwich purposes.

Undismayed by this proceeding and encouraged by the adoption of his process by Sir John Brown of Sheffield, Sir Joseph Whitworth, the great German engineer Mr. Krupp, and others, Bessemer prepared at the great Exhibition of 1862 to show its applicability to all purposes of iron or steel. It may be mentioned that what is called Whitworth steel is made by the Bessemer system. During the Exhibition the late Mr. Platt, M.P., of Oldham, offered Bessemer 50,000*l.* for a fifth-part of his patents as a sum down. Bessemer, desirous of securing himself, accepted this, and so far as we can make out Mr. Platt and his partners must have received at least a quarter of a million for their fifth.

At the Exhibition of Paris of 1867, Bessemer, out of delicacy to the French manufacturers, who had adopted his system, declined to exhibit any article of his own manufacture.

Notwithstanding his not being an exhibitor, the French Commissioners reported to the Emperor that the great progress of the iron manufacture in the preceding ten years was due to the persevering efforts of the English engineer. The Emperor had not forgotten his friend and the old experiments, and he expressed his intention to confer on Bessemer the Grand Cross of the Legion of Honour. Unluckily he put a usual condition, that the consent of the English Government should be given.

Mr. Bessemer made the necessary application to the English Ambassador in Paris, by whom permission was at once refused, and so was a second application. Thus not only did H. M. Government neglect to confer honours on Bessemer, but stood in the way of others rewarding him. It is strange the French Emperor should have allowed himself to be so thwarted. At the previous Exhibition the French Government had expressed its intention to offer the Legion of Honour to the English exhibitors as to the others; but Prince Napoleon was surprised to find the odd attitude taken by

the English Government, for he was aware they conferred decorations on people not remarkable for merit. He, however, took the opinion of an English man of science then in Paris, who told him that if the Legion of Honour were given to the English it would be accepted. The distribution accordingly took place, when some of the English in their cunning carried their crosses to the Ambassador, and asked if they could wear them. He good-naturedly told them not to inquire of him, and they have worn their decorations to this day. At the Exhibition of 1878 H. M. Government again attempted to prevent the English exhibitors from receiving the same rewards as the others, but were compelled to give way to public opinion. Some ridicule was attempted to be thrown upon the wearers; but surely it must be better for a manufacturer even of warming-pans to receive the Legion of Honour than for some one whose function at Court is little more than to carry a warming-pan to be created C.B., K.C.B., or G.C.B., with the Cross of St. Michael and St. George in addition.

The remembrance of such things naturally revives in Bessemer's mind all the bitterness of the long-smothered wrongs inflicted on him by the Government when he was but a defenceless boy. It is to the expression of these feelings that we owe the personal revelations of Bessemer's struggles with life, such as are rarely made known, and which offer a picture of so much interest. Often the life of a man of science presents no such incidents, but is confined to a dry list of his works or his discoveries.

However, the great inventor could afford to look with contempt on his adversaries. From the period of the French Exhibition his process rapidly spread throughout Europe and America, and it is wonderful to contemplate its growth. At the time of his invention, the whole make of cast steel in England with all the advantages of Heath's process was only about 50,000 tons yearly, at prices ranging from 50*l.* to 60*l.* per ton. This price was prohibitory for all structural purposes, for which, besides, the brittle nature of what was then known as cast steel made it unsuitable.

Sir Henry Bessemer remembers that when he first proposed steel for use as rails to Mr. Ramsbottom, then engineer of the London and North-Western Railway, the latter asked, in a fierce tone, if Bessemer wanted him tried for manslaughter. Now steel rails are being laid throughout the world wherever iron rails are worn out, at less than the original cost of these.

In 1877, notwithstanding the depressions of trade, the manufacture of Bessemer steel here was not less than 750,000 tons, at a cost of about 10*l.* per ton. Thus the make had grown fifteen-fold in a limited interval. The cost of the 50,000 tons was 2,500,000*l.* and of fifteen times as much only threefold that sum. What is of no less moment in a national point of view is, that while we are able to use such a greatly increased amount of steel, the saving in coal as against the old Sheffield process was equal to 3,500,000 tons, or coal for the household consumption of as many people.

Abroad, the use of Bessemer steel has become proportionally great. In the United States it is 525,000 tons, in Belgium 70,000

tons, in Germany 260,000 tons, in France 260,000 tons, in Sweden 20,000 tons, being in all a total make of nearly 2,000,000 tons of Bessemer metal. The price of steel rails is below 6*l.* per ton, and many an iron rail was laid at 10*l.*, 11*l.*, and 12*l.* Sir Henry may feel proud that he has founded a manufacture that is now worth 20,000,000*l.* sterling yearly, and which before the end of his life may well reach 100,000,000*l.* It is not, however, by the money value that this great addition to the resources of the world by one man is to be estimated. The advantages are felt in many ways. Even in the steel rails the labour of one man on every two miles that was required for iron rails can be dispensed with. On the existing rails in England it is estimated there is a saving of a capital sum of 170,000,000*l.* There is also a saving on hundreds of thousands of steel tyres for engines and carriages, besides less danger.

In 1862 they began shipbuilding with Bessemer steel. Few will be surprised to learn that this made no impression whatever on the Lords of the Admiralty, so that many years were

lost. Bessemer's steel anchors, invented in 1858, nearly a quarter of a century ago, are just coming into use.

At length honours began to come to Bessemer. In 1859 the Institution of Civil Engineers awarded him the Gold Telford Medal. Besides admitting him to the Council, and showing their appreciation of him in many ways, in that year they publicly presented to him a splendid piece of gold plate, made by Hunt & Roskell. Some ten years ago the Iron and Steel Institute elected him to be their President. About the same time the Society of Arts awarded him the Gold Albert Medal, though they yearned to give the medal to a foreigner.

The President, H.R.H. the Prince of Wales, to show more honour to the recipient, made the Presentation at Marlborough House in the presence of the Council.

Sir Henry Bessemer makes the free avowal that, gratifying as these tributes were, he was no less delighted with those friends who had paid him 1,057,748*l.* golden sovereigns, not an unhandsome fortune apart from other earnings.

Abroad many honours were tendered to him,

and some of them singular and such as Englishmen do not attain. He was elected an Honorary Member of the Iron Board of Sweden. The city of Hamburg bestowed on him its freedom in due form. The presentation of a gold medal from the King of Wurtemburg followed, together with a complimentary letter. The King of the Belgians is well known for the attentions he pays to men of learning, and on two occasions he drove over to Denmark Hill to have half an hour's conversation on the various important inventions. Sir Henry Bessemer's house at Denmark Hill is as remarkable for its associations as for its fine works of art. In the grounds he made at his own expense experiments on the plan for preventing seasickness on the Channel passage. Commercial difficulties, as is well known, interfered with the realisation of this project.

H. M. Government was not able altogether to stop out this inventor from receiving the rewards of his labour. The Emperor of Austria, having seen Bessemer's process at work, felt it his duty to confer on him the title of Knight Commander of the Order of Francis Joseph. The Emperor did not trouble H. M. Government on this

matter, but desired his own Ambassador to convey to Mr. Bessemer the collar and gold enamelled cross. This order confers the title of a gentleman, or what is called nobility, and we believe its holder, being otherwise qualified, can be created a Baron of the Empire. The Emperor of the French personally presented a massive gold medal bearing the great inventor's name. The Society of Arts of Berlin elected him an Honorary Member, and forwarded to him an address enclosed in an ebony and bronze casket.

Our brethren in the United States have no crosses and orders to bestow; but they found a better way of showing their gratitude. These decorations will lose their significance, and honorary membership be forgotten; but the Americans determined to perpetuate the name of their benefactor, not by planting a tree, but by planting a city. In Indiana a spot was chosen, fertile in resources, where a great centre of industry can be constituted, and to this they gave the name of Bessemer. It is a growing place, with a fine railway station, and its name already figures on all the maps of the State.

Arctic navigators are sometimes envied for their prerogative of attaching names to ice-bound capes. Cook was more fortunate, for the names he gave are now of familiar note in Australia and New Zealand; but the city of Bessemer will, it is hoped, for ages commemorate him from whom it received its name.

Thus, endowed with fame, favoured by fortune, covered with honours, and conscious of his deserving from the benefits he has conferred on the world, it will be well understood that he cannot still without repining look on the conduct of the Government of his native country, for which he has done so much. Even when in the grave there will be tributes of gratitude to him: statues and monuments will be erected and medals struck. A man so generous is greedy of nothing: but he cannot remember without pain how he has been treated by the Stamp Office, the War Department, the Foreign Office, and the Admiralty.

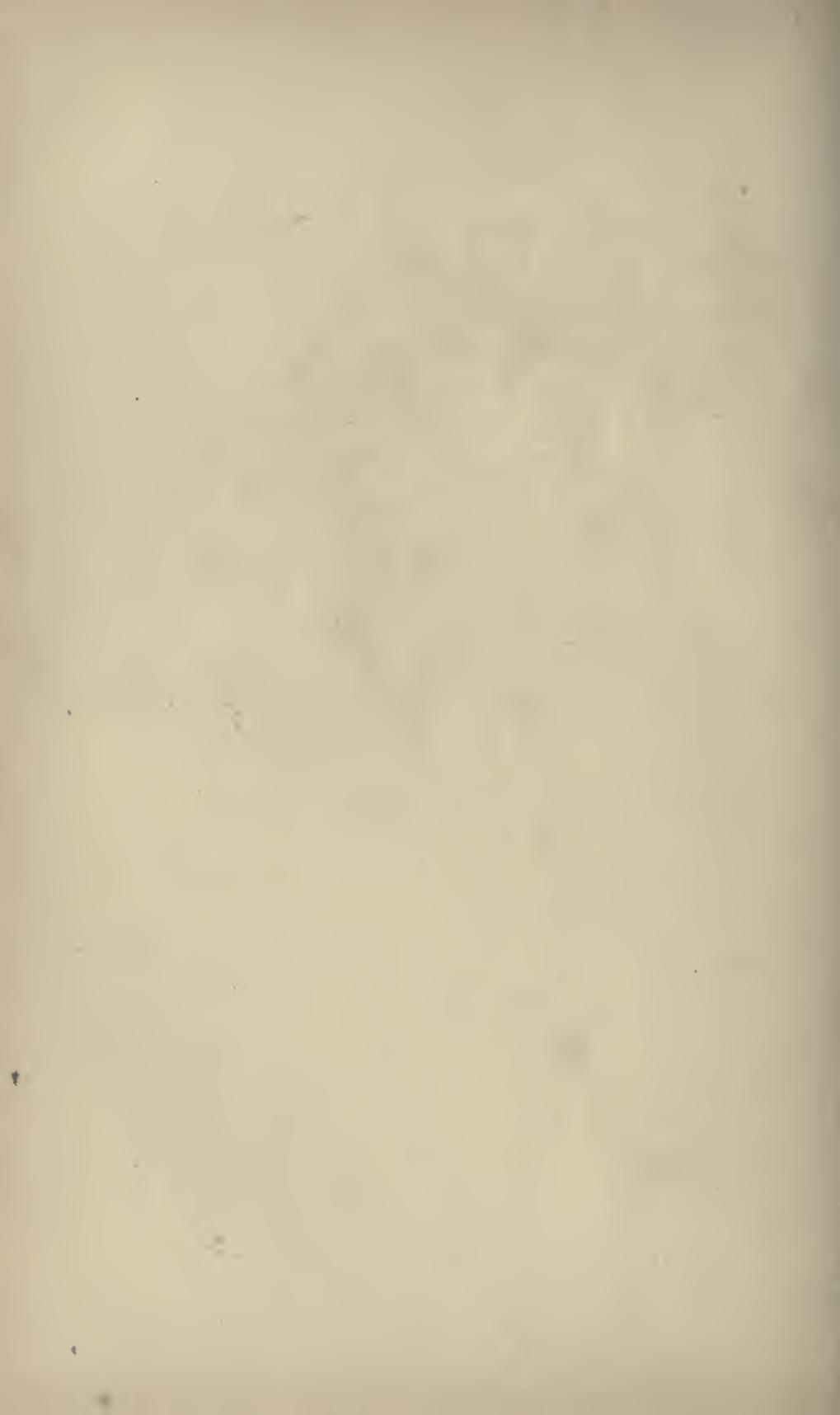
Undoubtedly there must be something wrong when no Premier or other Minister feels called upon to designate for testimonies of the national gratitude those who are national

benefactors. No doubt some day an ironclad will receive the name of Bessemer, though perhaps first abroad, and posthumous honours will not be wanting. Posthumous honours avail but little in comparison with that recognition which the living man receives. As it is, in most cases that small guerdon, the Companionship of the Bath, rightly awarded to a brave young captain, falls to a great man of science when he is threescore and ten, and when neither he nor his wife can venture out to the few evenings of celebration where fashion or fancy will allow him to wear it.

In the existing state of affairs men of science give their time, their abilities, and their money for the public good, rarely having the opportunity of obtaining a return, much less of making a fortune, as Sir Henry Bessemer has done. It is not they who are under obligations to the commonwealth, but the commonwealth to them; and it is a very small thing that suitable honours, which do not even entail a charge on the purse of the Exchequer, should be tendered. Twenty years ago, at all events, Mr. Bessemer had earned them; for twenty years he might

have worn them ; and it is by no means creditable to us as a community that towards the national creditor we are thus far insolvent, bankrupt even of thanks.

It is never too late to mend. After all, the knightly title is now borne by Sir Henry Bessemer. H. M. Government, perhaps a little bit ashamed of the exposure which has taken place, but too ungracious to make full reparation, have in these last days recommended the Queen thus to designate Henry Bessemer.



SIR JOHN BROWN.

SIR JOHN BROWN.

“**J**OHN BROWN!” The name is not entirely undistinguished in the annals of remarkable men, nor has it been unhonoured of the lyric Muse; but it requires, notwithstanding, an effort of the imagination to lift it out of the dull inglorious company of Smith, Jones, and Robinson. Upon a young man of humble antecedents just awakening to the serious side of life, and about to weigh his chances of making a mark in the world, it may easily be understood to produce a certain depression, to convey to him a discouraging premonition of failure, a chafing consciousness that another grim janitor was added to

“ Those twin gaolers of the daring heart—
Low birth and iron fortune.”

Charles Kean indicated the other extreme when he said that his father was the greatest enemy of his life. The eminent Edmund set the name of

Kean high in the bead-roll of genius, and left his son the hopeless task of sustaining it at the high-water mark. It may be a whimsical extravagance to suppose that the subject of this paper was hampered by the unheroic traditions of his patronymic, but remembering how much there is (or is not) in a name we may fairly assume that one of his minor tasks was to prove that the name of Brown was not necessarily the brand of mediocrity. What might be a purely imaginary difficulty to-day, when every lad is sent forth into the fray armed *cap-à-pie* with all the weapons he requires save those which nature gives him, was often a substantial hindrance when Sir John Brown made his bow to the commercial world. At all events, the youth who fought his way to a place amid the galaxy of industrial knights whose honours are the harvest of one generation—Sir Josiah Mason, Sir Henry Bessemer, Sir Titus Salt, Sir Joseph Whitworth, Sir William Armstrong among the number—took up the gauntlet which Fortune had thrown down to him under a social system which made the competition between even a rich dunce and a poor genius a cruelly unequal match. Young John Brown was poor. Whether

we may claim for him the attribute of genius must be gathered from the narrative of the success which he achieved and the way in which he achieved it. Carlyle defines genius as an infinite capacity for taking pains, and that infinite capacity, at least, was the birthright of John Brown. To his common name he united uncommon powers and uncommon qualities; and in the story which traces the gradual mastery of the innate strength over the external barriers the sentimental reader will not fail to detect a strand of romance which imparts a poetical charm to even a tale of steel, and which may prevent the iron from entering into his soul too deeply.

The history of Sir John Brown's career runs parallel with the industrial history of modern Sheffield. Fifty years ago Sheffield had not earned its distinction as the first smoke-producing town in the kingdom. Those casual critics who twit Hallamshire people with the dirty density of their atmosphere and flatter themselves that there is a sting in the taunt may undeceive themselves. Even Charles Reade's desperately insulting allusion to "this infernal city, whose water is blacking and whose air is coal," diverted rather

than annoyed the true-born Sheffielder. The patriotic Londoner who feels called upon to undertake the melancholy task of defending his indefensible fog has no idea of the contempt of Steelopolis for the horror which strangers affect at sight of what the author of the wondrous "Hillsborough" romance again calls the "acres of crape" which are supposed to make the place the abode of despair. An ex-master cutler lately spoke in tearful tones of the untoward return to comparative purity and buoyancy which the local atmosphere had of late years undergone. The fact is that smoke in Sheffield means not only fire but food and fortune. There is much to be said for this artificial cloudland from many points of view, but the painter will pour forth his soul in volumes in praise of the volumes of Vulcan as they coquet with the sun, and sidle into the company of the purified vapours of the heavens. Sir John Brown is largely responsible for the eminence, bad or good, which Sheffield has earned in the matter of smoke. When he entered upon his career the town was the cutlery capital and nothing more. Now it is the centre of the great South Yorkshire iron trade, and of that trade Sir

John has been called "the father." The manufacture of cutlery laid gentle tribute on all parts of the town, and suffused every street with a ~~not~~ unpleasant or unpicturesque film from its modest forges. The heavy iron trade fastened itself upon the then pastoral valley of the Don, called Attercliffe and Brightside (*sic*) into existence, as with a magic wand, and added a new terror to the east wind by making its rude breath the vehicle for the transportation of myriads of travelling "blacks" in search of spotless window curtains and bed linen. Sheffield and its principal suburbs are right in the wake of this sooty simoom, since the "black country," through which the wintry blast filters, slopes down from the north-east shoulder of the town.

Sir John Brown was born in Sheffield in 1816. His father was a slater, and while his family were never so pinched by fortune as to suffer privation, yet the early circumstances of the lad savoured of the rough school from which so many dauntless heroes of industry have sprung, and which, by early accustoming its pupils to a share of the buffets of the world, prepare them to resist manfully in later life the shocks of failure, discourage-

ment and disaster. In these early days young Brown was fortunate in two respects. In his father he had a mentor who united sterling old-fashioned virtues to a shrewd perception of the tendency of the age and of the advantages of education ; and in his schoolmaster he found not only an enlightened and painstaking instructor, but a friend who probably had much to do with his start in the somewhat ambitious career upon which he had set his heart. The pastures of knowledge into which he was turned to browse were approached by three flights of stairs—most appropriately, it might be said, for a “rising” youth—and the modest dominie drew particular attention to his “knowledge of the English language,” an acquirement which would not always be an entirely idle boast even in these latter days. Among the scholars of this unpretending garret-school were boys, besides young Brown, who were destined to make the names they bore eminent in local annals and familiar sounds in the world’s ear. Under this roof, too—for children of both sexes imbibed knowledge from the same fount—sat, opposite to the slater’s son, Miss Mary Schofield, afterwards to be gentle-hearted Lady Brown,

whose death in October, 1881, impoverished even the poor and awakened throughout Sheffield a thrill of tender regret. The fathers of the interesting pair thus destined to be associated from early youth to ripe age in all the gradations from lowly station to affluence and honour, were old friends, and Sir John, roving with a lingering fondness through the incidents of his early love, tells a story which is simple, even commonplace, in itself, but which, remembering that pity is akin to love, may have a significance beyond its superficial import. The schoolmaster, though not cruelly severe, belonged to the kingly race, now extinct, who had large ideas of pedagogic dignity, and who supported it with all the weight of their small despotism. When young Brown first appeared in the august presence he, with the daring of self-reliant precocity, failed to comport himself with the humility proper to the occasion, and in answer to all his tutor's interrogatories, gave a brusque "Yessir!" and "Nosir!" with an air of mock respect that unhinged the gravity of the assembled scholars, and enabled them, like Goldsmith's rustics, to "read the day's disasters" in the frowning countenance of the master.

What dire punishment befell the offender we need not tell, but it is part of this love legend of Sir John's that his little sweetheart went home and acquainted her father with the audacity of "poor Master Brown," and tremblingly foreshadowed the terrible penalties that awaited him.

Instead of exciting permanent hostility, however, by this bold behaviour, "Poor Master Brown" became one of the pets of the master. His path over the thorny road to knowledge was made smooth and pleasant, and when the time came for the youth to cut himself adrift from the friendly anchor upon which he had accustomed himself to rely, his tutor rendered him good service in directing him into the right channel. The lad's father, in running through the list of eligible occupations for his son, had, for some reason or other, hit upon the trade of a linendraper, and propounded the idea to him. The youth met it with a determined negative. "Why not?" demanded the father. "I don't know, but I'll never be a linendraper." Mr. Brown insisted, and the son resisted: "If you put me to a linendraper I will run away—I will go to sea," said he. This unwonted display of independent judgment

somewhat staggered the parent, and led him to make the rather tardy inquiry as to what his son's choice was. "I should like to be a merchant," exclaimed young Brown; "a merchant does business with all the world." "I had seen merchants in the town," adds the veteran knight of to-day in explanation, and by way of condoning the wild ambition of this vague demand, "and saw that they were first-rate people, with large establishments, and the world at their feet." The bold impracticability of the boy's simple programme startled and irritated his father, who, after he had recovered his breath, retorted severely, "You will be what I say—a linendraper." Another definite rejoinder escaped young Brown, and the scene closed with a peremptory command to leave the room. It was at this crisis that the counsel of the schoolmaster was sought, who strenuously held that the youth should not be put to any trade that he disliked. "It shows there is something in the lad to talk about being a merchant," he argued. "No other boy in the school knows what it means."

Thus it came about that, in 1830, when, in his fourteenth year, the lad was apprenticed to

Messrs. Earl, Horton & Co., a firm of merchants or factors, dealing in the wares of the town. At this period Sheffield was an unconsidered emporium of trade. It was not represented in Parliament. It was not an incorporated borough, and it was governed in a loose and fragmentary way by Police Commissioners and the Cutlers' Company, which latter, however, had no legal standing. By day it was pretty much left to take care of itself, and by night the duty of guardianship was shared between less than half a dozen watchmen of the "Charley" type. The turbulent period of two years later did not pass away without bloodshed ; but the town came out of the political crucible dignified with parliamentary representation, and recognised as one of the mainsprings of England's industrial progress. Those who know the Sheffield of to-day and are aware how closely the Wicker, the Moor, Rockingham Street, and Fitzwilliam Street lie against the heart of the town may be surprised to learn that those crowded thoroughfares were then a heterogeneous mixture of country and town, of corn-fields and suburban cottages, upon which the pioneers of the local industries were preparing

to pounce. Messrs. Earl, Horton & Co.'s establishment was, at the time of John Brown's first association with it, in Orchard Place; but some six years later the firm embarked upon the manufacture of steel, files, and table cutlery, and removed to Rockingham Street, where they established the Hallamshire works. In the mean time the apprentice was discharging his duties with conspicuous ability and integrity, and though he received no wages at all during the first two years, and but six shillings a week for the remainder of his educational service, he was all the time unconsciously storing up in the minds of his employers seeds of goodwill, which, at the expiration of his term, showered upon him a profuse harvest of recompense. At the close of his novitiate his father gave him a sovereign and a suit of clothes, and bade him rely for his future success upon his own abilities and industry. When he became of age, however, a few months afterwards, Mr. Earl gave him a surprise which showed how deep was the impression which he had made upon his employers. This was no less than an invitation to enter the firm as a partner. Want of capital

prevented the youth from availing himself of this generous offer; whereupon the kindly master offered him the factoring portion of the business of the firm, and in addition undertook to find money to assist him in conducting it. This opportunity was too good to be lost, and young Brown set himself to discover a means of raising his share of the capital. His efforts resulted in one of his uncles, who was in good circumstances, joining with his father in guaranteeing 500*l.* to a bank in the town; and with his timely aid the founder of the great Atlas Works became master of a business. In this capacity he travelled through the country with horse and gig, carrying his own samples, and canvassing for his own orders. Later on he set up a four-wheeled sample carriage such as is used by one or two old-fashioned Sheffield houses to this day. By and by he made his own cutlery, and the taste for production increasing, he determined to enter upon the manufacture of steel. Too conscious of the kindness which he had received at the hands of his old employers to throw himself into competition with them against their will, he solicited and obtained from Mr. Earl their

consent to this addition to his business enterprise.

With his energies thus unfettered he embarked upon that special line in which, with the intuition and foresight which form so remarkable a feature of his career, he perceived such vast and splendid possibilities. The staple products of the town he made a means rather than an end. He relied upon them during the unprofitable interval which always precedes new developments. He studied, and speculated, and experimented upon steel as the final and best product of the raw ore of the earth. The dawn of the railway era was his opportunity. He saw boundless demand in this new adjunct of civilisation, and boundless resources in the material to which he had devoted his attention. He removed to Furnival Street, applied himself solely to the production of steel, files, and railway springs, and disposed of his factoring business to Messrs. H. G. Long & Co. For several years these articles were his chief manufactures ; but another railway speciality was destined to carry him into the full tide of prosperity which he afterwards enjoyed. Up to 1848 railway rolling stock

presented an appearance which would now appear strange—it was practically bufferless. Mr. Brown saw here a necessity which would soon become imperative, and he patented the conical spring buffer. Its success, for a novelty appealing to railway companies, was prompt, but by and by it became overwhelming. His first customers for it were the now thriving Taff Vale Railway Company, the Glasgow and South-Western, and the Dublin and Drogheda Companies. Before long he was turning out 150 sets per week. Shop after shop was added to his parent establishment in Furnival Street in various parts of the town, and a spring shop was taken at Rotherham. The inconvenience of these scattered branches became so oppressive that he soon began to cast about for an opportunity to concentrate and consolidate. The opportunity came in 1854, when the Queen's Works in Saville Street—the part of the town which is now dedicated to rolling-mills and steam-hammers—were offered for sale. These works covered three acres, only a third of which was built upon; and by way of contrast it may be mentioned that under their

new title, the Atlas, they now embrace twenty-five acres. The only manufacturing emigrants of present importance that preceded Mr. Brown in this then rural region were Messrs. Charles Cammell & Co., and Messrs. Thomas Firth & Sons. In that day the sky was as blue and the air as pure in the Don Valley as in the peak of Derbyshire. Wild flowers danced before the office windows, and the tender foliage of adjacent woods for a short time resisted the blighting influences of furnace and forge. But ere long, as firm after firm added their sooty quota to the industrial settlement, the flowers ceased to bloom, the trees became stunted scarecrows, and the country landscape was blotted out. Now vegetable life is a tradition hard to believe in. Every yard of ground as far as the eye can reach (which in times of "prosperity" is not far) is redolent of the devastating trade introduced by the subject of this paper.

But if the Atlas Works brought destruction to Nature they brought life and prosperity to man. The great exhibition had put trade generally upon its feet; but if there was an industry to which the vast show lent impetus and vigour it was

the iron and steel trade. The age of iron had arrived with the railways, and in its train it had brought the germ of the age of steel, of which we see probably nearly the full development to-day. Sheffield was always peculiarly the seat of the steel trade, and the railway material to which Mr. Brown had given his attention increased enormously the demand for what is called steel-iron. Hitherto this had come almost exclusively from Sweden and Russia, which the natural advantages of rich ore and unlimited charcoal resources still constitute important producing centres for raw material of the best class. Mr. Brown saw not only that the time must come when Sweden would be unable to respond to the ever-augmenting demand, but also that an important industry of a new and perfectly legitimate kind might be introduced into Sheffield. The only attempt to produce iron for steel-making purposes at that time being made in this country was conducted at a small concern in Staffordshire, and practically none but foreign iron was used by the steel manufacturers. Mr. Brown, to use a northern phrase, “put his mind in steep,” on

the subject. He gauged the difficulties, and speculated upon the consequences of success. He took the opportunity of mentioning the project at a meeting of Sheffield manufacturers, and was laughed at, as all great pioneers of industry are, as the pursuer of a chimera. The founder of the Atlas Works, however, was not a man to retreat before ridicule. Tenacity and resolution were the guardian sentinels of his genius, and throughout his active career they never permitted him to waver in the pursuit of an object which his judgment commended. The adverse reception of his scheme by his fellow-manufacturers stimulated rather than damped his determination, and before very long the men who had foretold failure came to swell the tide of his success, and buy from him iron which Sweden could not supply on the same terms. It was this achievement that conferred upon Sir John Brown the honourable title of the "father of the iron trade" in South Yorkshire, and no doubt largely contributed to the continued supremacy of Sheffield as the metropolis of steel.

Having thus laid a foundation for business on

a large scale, the proprietor of the Atlas Works threw all his prodigious energy and tact into the concern, and soon became one of the leading manufacturers of Sheffield. How rapidly his business increased at this time may be gathered from the fact that whilst in 1856 his turnover was 63,000*l.*, in the following year it had augmented by one third, being 95,000*l.* To John Brown's acute perception and enterprise Mr. Bessemer owed not a little encouragement at a time when the famous Bessemer process of steel-making seemed to hang midway between success and failure. Mr. Brown did his best to turn the tide in the inventor's favour by taking and promptly availing himself of the first license to manufacture issued under Mr. Bessemer's patent.

During these early years of the Saville Street works many things were added to the list of their productions. The railway material trade floated Mr. Brown into prosperity, and this was reinforced from time to time by the addition of boiler and bridge plates, &c., as well as the manufacture of steel-iron already alluded to. But at this time the establishment,

unconsciously to its head, was within measurable distance of a new departure which was destined to make not England alone, but all Europe, ring with the name of John Brown—the production of thick rolled plates for the defence of vessels of war. This portentous development of naval warfare may be said to have been due, like many other great discoveries, to accident. It is, indeed, a contribution to the romance of industrial history. Returning from a brief Continental tour in 1860, Mr. Brown found himself in Toulon, and into Toulon harbour steamed a French man-of-war of a new type which had given our Government some amount of anxious concern. It was the *La Gloire*, whose high decks had been “improved off” the vessel, and such portions of her as could not conveniently be placed under water clad in iron armour four and a half inches in thickness. The ship not unnaturally excited the visitor’s curiosity. He asked to be allowed to go on board, but was refused. Under these circumstances he got as near to her as he could, examined her suit of mail at a respectful

distance, and picked up as much information generally as astute officials could be made to drop. Mr. Brown found that the four and a half inch armour consisted of hammered plates five feet long and two feet wide. He returned to Sheffield, convinced that he could produce plates tougher, more uniform in strength, thicker, and larger by the process of rolling. It was a hazardous experiment, involving a large outlay in plant and patience, and tests almost as expensive. Nevertheless, he determined to take the risk. He erected a rolling mill, selected his workmen, buckled himself to the task, and in a short time, after some preliminary communications of a not very encouraging character with the Admiralty, he invited Lord Palmerston, then Prime Minister, to visit Sheffield, and see a plate rolled for himself.

It should be explained here that his busy life as a manufacturer had not prevented him from taking his share of the municipal cares of the town, and in this year of 1862 he was enabled to offer the Premier a chief magistrate's hospitality. Lord Palmerston responded to the

invitation. The plate-rolling was a complete success, and his lordship saw an armour-slab turned out of the mill upwards of six tons in weight, measuring 18 ft. 6 in. long, 3 ft. 9 in. wide, and $5\frac{1}{2}$ inches thick. Previous to that the Government appeared to have come to the easy—or uneasy—conclusion that no plate thicker than the French armour—four and a half inches—could be produced and adapted to the requirements of naval defence. When we reflect that armour-clads are now riding the deep with apparent comfort wrapped in a casing of iron and steel some twenty-two inches in thickness, the extent to which official wisdom was mistaken may be realised. The fact was, as Mr Childers himself aptly said not long ago, the guns of twenty years ago were mere popguns in comparison with the monster ordnance of to-day. Guns of five or six tons were the most destructive weapons of offence that could be mustered. Mr. Childers stated that he was scoffed at as being “absurdly before the times” when only some eight or ten years ago he proposed to arm our navy with thirty-five and thirty-seven ton guns, whereas we are now ready

to sweep the seas with ordnance of eighty and one-hundred ton calibre. The difference between John Brown and the Admiralty was, that whilst he was a practical man and a pioneer of progress, "my lords," although members of a Liberal Government, were theorists of a very Conservative school. John Brown allowed for advances in artillery, and saw that though only four and a half inches of armour could be pierced by the ordnance of the day, the time would come when fourteen and a half inches would not withstand the shock of an enemy's ball. The fact was his neighbours, Messrs. Firth & Sons, were, in a sense, bombarding him. Just across the way this firm were casting the guns that were to shatter his plates, and the head of the *Atlas* had, as it were, the din of battle in his ears.

The result of his negotiations with the Admiralty was that Mr. Brown threw a challenge down to the Government. He offered to roll three plates of five, seven, and eight inches in thickness respectively. These plates were to be fixed to a certain kind of target, and if they failed to resist the shot that penetrated the four

and a half inch armour, he undertook to bear the costs of the test. As has been shown, Lord Palmerston saw a five and a half inch plate produced; but in order to turn out the thicker armour a new rolling mill had to be laid down. At the opening of this mill in April, 1863, the Duke of Somerset and the other lords of the Admiralty were present; and after they had seen its capabilities they returned to London wiser, and probably sadder, men. They witnessed the rolling of plates ranging in thickness not from four and a half inches to eight only, but to twelve. The twelve-inch slab measured about twenty feet in length; and subsequently a five-inch plate was made, upwards of forty feet long and four feet wide. The success of the day's work was more than complete, and it removed from the official mind the film of prejudice which had previously stood in Mr. Brown's path. The occasion was one of triumph to the men as well as to the master; for it was the pride and boast of the latter that his *employés* felt a common interest with himself in whatever affected the works and their prosperity. There was a cheer as the distinguished party

approached to inspect the huge slab of metal, and the host paused to give them a characteristic word of praise: "We are all proud of your exploits; you are worthy of the name of Englishmen. His Grace the Duke of Somerset wishes me to express his admiration of what you have done."

In the large dining-room, erected in the suite of offices for the convenience of the staff, a collation was provided, and the Duke of Somerset proposed the health of the head of the establishment in these terms: "We are very glad to come here, and I am sure I have profited and been very much interested in what I have seen to-day. Nothing is more interesting to me than seeing these works, and seeing the men of these works; to see the intelligence, the good temper, and the kindly feeling towards the head of the establishment. It has convinced me that the men themselves are well treated, that they feel they are well treated, and they showed what great kindness and good judgment must be possessed by the head of the establishment. That is the only way in which you can carry on great works like these we have

seen to-day. I cannot, therefore, close the observations I have made without asking you to drink the health of Mr. Brown, coupling it with ‘Prosperity to the new rolling mill,’ for it is a great thing in the proceedings of this day. It is the most striking thing, and will be in the future one of the most wonderful pieces of machinery that have ever been made in this country.”

Punch had a droll account of this auspicious occasion, which is worth referring to in order to show with what admirable satire he hit off the relations of Ministers and manufacturer.

“‘Now,’ said Mr. *Punch*, ‘let the ceremonial proceed. Somerset, my boy, do you think you understand anything about the process?’

“‘Well, yes,’ said the First Lord of the Admiralty. ‘I think I do. You see, they make it hot, and then—’”

“‘Make what hot? Brandy-and-water? That reminds me that I should like a little, for I am far from well.’

“‘I mean the iron,’ said the Duke, when Mr. *Punch* had finished the liquid that was tendered to him as he spoke.

“‘Well, why didn’t you say the iron? didn’t you like to speak ironically?’

“‘It is well that Mr. Brown has built his works strongly, for a shout like that which followed would have brought down any light erection.

“‘Well,’ said the Duke, ‘they take it out of the furnace and roll it between these rollers, and that is all.’

“‘Not quite,’ said the Mayor, with a quiet look at Mr. Punch; ‘but his Grace is not altogether an unintelligent observer. Here comes a plate.’

“The brawny giants suddenly drew open the door of a vast furnace, and you had an idea that a large piece of blazing fire had got in there by accident, and it was about as possible to look in the face of the fire as of Phœbus. Then, tugged forth by the giants, out came a large slab of red-hot metal, just the thing for a dining-table in Pandemonium, and it was received upon a mighty iron truck, and hurried along to the jaws of the rolling-machine. As it was drawn fiercely into the mill a volcano broke out, and the air was filled with a shower of fire-spangles of the largest construction, and eminently calculated to make holes in your garments. The monster slab was so

mercilessly taken in hand by the mighty wheels, and was hurled backwards and forwards, under terrific pressure, and so squeezed and rolled and consolidated that when at length it was flung, exhausted, as it were, upon the iron floor beyond, Mr. Punch was reminded of the way in which he has dealt with, improved, and educated the public mind for the last twenty years.

“‘And that’s the way I propose to defend the British Navy,’ said the Duke of Somerset, looking as if he had done it all.

“‘Mr. Mayor,’ said Mr. Punch, ‘it makes me thirsty to hear these aristocratic muffs going on in this manner. I hear you have spent 100,000*l.* in this single part of your works in six months, and that you are going to build largely in addition. Sir, I suppose that we, the nation, shall have to pay you a trifle for what you manufacture?’

“Mr. Brown smiled, as if he thought that just possible.

“‘Sir,’ continued Mr. Punch, ‘I rejoice thereat. I don’t care what these things cost. I consider them the cheap defence of nations, at least of our nation, which is the only one I care a red cent about. These things will make war as nearly

impossible as anything in this mad world can be ; and therefore, Mr. Brown, I hope that you will go on making them until further notice.'"

Alas for the infallibility of our merry and wise monarch ! He is older than he was, and would scarcely lay the flattering unction to his soul to-day.

The 100,000*l.* which Mr. Punch mentioned as the outlay entailed by the development of the armour-plate branch of Mr. Brown's business soon fell very short of the actual figures. As soon as he felt that he had solved the problem, and was assured of the support of the Government, he put, practically, no limit upon his judgment. He gave his always enterprising spirit full play, confident that he had struck a vein that would yield a golden harvest. He set about the extension of his premises to some twenty acres, and in this, as in every other detail of his business, he was master of the situation and the directing mind. He was his own architect. Every building was traced under his immediate instruction. Even the mechanical engineers who supplied him with machinery were called upon to abandon precedent and work to his ideas. When a well-known

Glasgow machinist offered his most powerful productions, and challenged the proprietor of the Atlas Works to break them, Mr. Brown simply answered that he must have stronger work, and called for the maker's designs. Upon these he marked the portions where he considered greater strength would be required, and the result was that he was supplied with monster machines, twice as powerful as any before made.

The Sir John Brown of to-day is justifiably proud to recall the fact that his attitude at this period represents him in the light of an Englishman first and a cosmopolitan trader afterwards. As soon as it would permit him he served his country first. For not the first time in the history of English industrial progress foreign Governments first recognised, and were anxious to profit by, the genius of the inventor. Ere the authorities at home were able to make up their minds, pressing orders from other Powers came to Mr. Brown for rolled armour plates, while yet the home Government were dallying with the new departure, but he steadily declined to execute them without the consent of the Admiralty, with whom he was in tedious negotiation. The

Northern States of America, on the verge of deadly conflict with the South, begged him to supply his heavy armour in vain, and autocratic Russia found in the son of the Sheffield slater an autocrat as obdurate and powerful in his way as the Czar himself.

The next important revolution in the trade of which the proprietor of the Atlas Works was the pioneer was a revolution in rails—the change which has now converted the permanent way of almost every railway in the world into paths of steel. This was one result of the Bessemer process, of which, as we have said, Mr. Brown was the first to avail himself. In this case also the foreigner was first in the field in appreciation of improvement; and as there were no reasons of a patriotic nature to influence the manufacturer in stimulating English perception and open-mindedness, Mr. Brown placed no obstacle in the way of the French railway companies who first tendered him support. By and by, when the French, and Italians, and some other Continental peoples had demonstrated the importance of adopting steel instead of iron rails, the English engineers began to wake up to a sense of the progressiveness

of human affairs, and to think seriously on the change which others had inaugurated. But even then they thought, like Washington, "slowly," and not half so surely. They complained of the price of the steel rails as compared with iron, the former being then some 28*l.* per ton against 12*l.* for the latter, to which Mr. Brown replied that if they cost double the amount, they would stand at least six times the amount of wear and tear. Still the English companies held back, and Mr. Brown saw that he could only convince them by practical demonstration. He made them presents of samples of rails, and allowed them to make their own tests. The London, Chatham and Dover Company laid down at the Victoria Station six steel rails from the Atlas Works and six iron rails from the Ebbw Vale Works at the same time, with the result that the latter were replaced twelve times before the former required renewal. Such overwhelming evidence as this could not be disputed. The demand for steel rails became prodigious, and within a very few years ninety per cent of the main line of the Great Northern Company was relaid with steel. Every year the orders for iron rails grew feebler; and

with steel rails at from 5*l.* to 6*l.* per ton we can now appreciate at its due value the foresight which fought against the obliquity of the railway companies.

A host of other branches of the iron trade, which do not call for special notice, were from time to time added to the business of the Atlas Works. These contributed largely to the dimensions of the concern; and long before the period of which we have just spoken Mr. Brown took into partnership Mr. J. D. Ellis and Mr. W. Bragge. Later on the expansion of the business had become such that it was deemed advisable to convert the concern into a limited company, and on February 22nd, 1864, this project was carried out, the capital subscribed being no less than 1,000,000*l.* The founder of the firm naturally took the post of chairman.

Sir John Brown for some years has ceased to have any interest in the company which trades under his name. It may have been that he found the restraints which the interests and claims of a large body of shareholders necessarily imposed upon him, and of which he had previously been so free, irksome, or perhaps he felt that, having

built up the name and fortune during an active career of forty years, and received from Her Majesty the crowning honour of the edifice, he was entitled to give himself up to the *otium cum dignitate*. Probably the step was due to a little of both considerations.

In the course of a career so picturesque and remarkable, there must be many incidents of interest to serve to show the secret springs of success, and to give some idea of the grit of the man. "Neither chance nor fortune" is the English rendering of the motto that adorns Sir John Brown's coat-of-arms, and the words convey with sufficient clearness the principles upon which he worked. These were in brief—honesty, thoroughness, and punctuality in their most rigid form. A striking instance of the value of the last rule occurred in the earlier part of Sir John's career, and gave him the most encouraging practical proof that the virtue was worth cultivating. At the time when the Edinburgh, Perth and Dundee Railway was about to be opened, he was in the former city, and chanced to call on Mr. Grainger, the engineer of the line. Everything was in readiness, except a few sets of brake springs,

which the contractor was unable to supply ; and as it seemed impossible to get the articles required in so short a time, it looked as though the ship was going to be spoiled for the want of a penny-worth of tar. Mr. Grainger mentioned the matter to his visitor, and in sheer desperation asked him if he could supply the springs “by Thursday.” This was on the Saturday, and Mr. Brown replied that, considering the imperfect carrying communication, he feared the time was too short. “Well,” rejoined Mr. Grainger, “we must have them.” The visitor considered for a moment, and then said, “ You shall have them.” Away he started forthwith to Berwick, took the train and coach for Newcastle, train forward, and reached Sheffield at 11 P.M. on Sunday. Here he went straight to his foreman, told him to have the men there first thing in the morning, and gave positive orders that the springs were to be ready on Monday night. The goods were packed at the appointed time, and away the maker flew with his burden to Manchester for steamer at Fleetwood. Here he had arranged to have a waggon ready to convey the springs to the station from which the mail for the north

started. He was in time for the train ; but when he presented his consignment, a new difficulty met him in the refusal of the officials to load such goods in the mail. Mr. Brown went straightway to the manager, told him his case, and got a horse-box put on to convey the springs. After a devious journey, and not without many threatening *contrestemps* and anxious moments, the traveller reached Glasgow *via* Ardrossan at five o'clock on the Wednesday afternoon, to the amazement and gratification of the engineer. Mr. Grainger not only compensated the enterprising manufacturer for his outlay and pains, but also introduced his feat to the notice of most of the railway directors present at the opening ceremony, and the gallant effort threw into John Brown's works for a considerable time the bulk of the Scotch trade in railway material.

As in the lexicon of youth there is no such word as "fail," so in the well-selected vocabulary which the founder of the Atlas Works chose as his *vade mecum* when he resolved in the flattering ardour of youth to be a "merchant," there was no such word as "impossible." The

proscription of the verbal refuge of the average mortal was not the outcome of a principle peculiar to the subject of this paper. The spirit which underlay it is as old as human aspiration, though a good deal less common. But with John Brown it was a solemn and a severe observance. He was a contemptuous unbeliever in the finality of human power in matters material, and the word jarred. He gloried in the broad truth of the sarcasm of the French *savant*—"If it is 'difficult,' it is done already; if it is 'impossible,' it shall be done." The servant who entered his presence and maintained that a given task was impossible quitted the room without a situation. The master was relentless on this subject. He could tolerate and sympathise with a fair representation of the difficulty of a proposal, but he exacted from all his *employés* a *bonâ-fide* co-operation in the mastery of it. And if any man ever had a right to be dogmatic and austere on such a point, surely the bearing became him who, from the doorstep of a slater's home, successfully stormed the frowning strongholds of fortune, fame, and title.

Qualities like these rallied rather than repelled

his workmen. The passing allusion of the Duke of Somerset to the strong bond of union that evidently existed between employer and employed singled out, as if by intuition, the keystone of the great industrial fabric. John Brown was not a counting-house chief, a trading tradition to be approached through a dozen deputies. He worked new ideas upon old lines. He was old-fashioned and conservative in all that was robust and healthy in English character; receptive and radical in all that gave promise of progress. This union of qualities, this running of new blood into the old veins, was a happy basis for the welfare of the Atlas Works. The master was a living and visible head, knowing every man in the yard, and known and approachable to all. The result was mutual respect; and on occasion, as the sterling character of the master asserted itself in high relief, that respect deepened on the one side into actual reverence. Such an occasion arose when, soon after the firm had gone into the iron trade, a vast building, 365 feet in length, was being added to the covered portion of the premises. The undertaking was an ex-

pensive one, and not the least important feature of it was the time occupied in construction. One Sunday morning, shortly after the roof had been put on and the building finished, a man, pale and breathless, darted into the old parish Church of Sheffield, and enquired for Mr. John Brown.

“What is the matter?” asked the latter, when he had passed out of the door, and saw one of his own workmen before him, with big tears standing in his eyes.

“It’s all down, sir!” gasped the man.

“What is down?” rejoined the master.

“The roof of the building is blown down!” returned the messenger.

“All down?”

“All, sir.”

“Then go to Harvey at once, and tell him to prepare to put it up again,” said Mr. Brown; and pocketing the loss of a thousand pounds involved without a word of regret, to the amazement of the man he turned and went back into the church to hear the sermon.

Work at the Atlas Works was always well done, and the old spirit of thoroughness lingers

with them yet. Their founder would never allow doubtful workmanship to go off the premises. Doubtful workmen went off instead. This policy has been the sole talisman of those great Sheffield houses whose names are, like Scrooge's, "good on 'Change" all the world over—the Rodgers, the Jessops, the Firths, the Wostenholms, and others. In his retirement, Sir John is as unbending as ever in his insistence on good and honest work. Every piece of joinery used in the construction of his noble mansion at Endcliffe was made and put together in the rough twelve months before it was required, and every stone and ornament bear an impress that would equally surprise and delight Mr. Ruskin—"Truth." To this golden rule is to be attributed in a very great degree the fact with which Sir John closes his self-revelation: "My works always pushed *me*. I could never make them large enough."

Such is an outline of the industrial history of Sir John Brown. His social career is outside the province of this article; but it may be said to have been in keeping with his splendid success as an inventor and a manufacturer. When

he turned his back upon the industrial hive which he had established, he recognised the truism that

“ Absence of occupation is not rest;
A mind quite vacant is a mind distressed.”

He was never so completely immersed in his own affairs as to forget the duties of citizenship. He had gone through the best municipal training when his fellow-townsmen laid tribute upon his dignified leisure as the knight of Endcliffe Hall, and made him chairman of the first School Board in Sheffield. As town councillor, alderman, mayor twice, Master Cutler twice, magistrate, town trustee, Church burgess, and Deputy-Lieutenant of the West Riding, Sir John Brown has served his native town without stint, and always with honour, wisdom, and success. Recently his bust has been placed in the board-room of the School Board in commemoration of his services to that body. Advancing years and domestic anxieties, necessitating travel, have of late years deprived Sheffield of his counsel and the advantage of his administrative powers, and have now thrown beyond realisation the hope at one time entertained,

that he would represent the town in Parliament. As a magistrate and Chairman of Ecclesall Board of Guardians Sir John is still, indeed, linked to public life; but the heavy blow which so long threatened fell upon him at last. The death of Lady Brown was not a purely private calamity. Her quick sympathies and silent charity rendered her better known among the poor than in society, and the suspension of her kindly enterprises has left a gap in many humble homes and hearts.

A brief allusion must be made to the chief of Sir John's public benefactions—the handsome church, standing upon a high shoulder of ground, looks down upon the "black country" which the donor did so much to colonise. The rapid development of the district drew attention to the dearth of religious accommodation, and one of the first to recognise the necessities of the case was the proprietor of the Atlas Works. He found 20,000 people without the means of attending a place of worship. The church which formerly covered the district was situated a considerable distance away, and would only seat 500 persons. A commission was appointed to mark out an ecclesiastical district embracing 10,000

souls. Before the scheme had been carried into effect, however, the Church Extension Society was formed, and Mr. Brown at once offered to subscribe 5,000*l.*; but finding this likely to result in the construction of an edifice inadequate and unsatisfactory, he decided to erect the church entirely at his own cost. The offer was accepted, and the corner stone was laid on May 19th, 1866, by the Archbishop of York. The edifice was ready some twelve months before it was opened for public service, owing to an unfortunate dispute with the vicar of a neighbouring church on the subject of the right of patronage. On February 5th, 1869, however, the church, which was dedicated to "All Saints," was opened by the Archbishop, who, in referring to the noble gift of Sir John Brown, said: "I feel persuaded from many conversations, and therefore from what I know, that the feeling uppermost in his mind was not to raise a grand temple, which, seen from afar by men, would be an ornament to the town, and a monument to his own liberality. I feel sure it was his great anxiety to labour to do what he could towards the saving of the souls of those who work for him."

The total cost of the edifice was some 11,500*l.*, and to this sum Sir John subsequently added 700*l.* for a peal of bells. Few who have had experience of the donor's sterling character will doubt the truth of what Dr. Thomson said in the foregoing tribute; but what Sir John would have shrunk from doing the grateful Sheffield folk have had no compunction in doing for him. As Pope says :

“ Who builds a church to God, and not to fame,
Will never mark the marble with his name.”

But if a stranger asked to be directed to All Saints' Church, the probability is that he would be told Sheffield possessed no such edifice. “John Brown's Church” is a landmark from which distances are measured and localities fixed. It is the pivot on which the topographical world of that half of the town revolves.

In indicating, faintly enough, the qualities that have sustained Sir John Brown in his extraordinary career, the assistance of his contemporaries and of impartial observers must be invoked. The testimony of these is in singular agreement. In the words of one honoured citizen of Sheffield, he “always seemed to see a

little ahead of everybody else." He was essentially a pioneer, with the daring, the coolness, and the pertinacity that go to make pioneering work successful. He broke new ground, but he was gifted with a rare power of appraisement which enabled him to decide accurately whether the new ground was worth the breaking. He was quicker in his perception of the advantages of new ideas than some rivals who prided themselves upon being less chained to old-fashioned notions than Sir John Brown. But, as has been pointed out, his was a moral rather than a material conservatism. He stuck to the living forces of the mind and heart, and would embrace no new-fangled idea that compromised the solid virtues of English character. Thus he welded old and new, and found in the combination the secret of true progress. A very prince of progress in this form, he often made it his business to take time by the forelock, and grease the wheels of the van of civilisation. There is one final example of conservatism in Sir John Brown which all will admire, and which illustrates, in a peculiarly touching way, the simplicity of his tastes and the goodness of his heart. "I have often felt," said

he to the writer, "that I should like to spend the last five years of my life exactly as I spent my time fifty years ago—with the same home, the same friends, the same haunts."

THE SALTS, AND THE DISCOVERY OF
ALPACA.

THE SALTS, AND THE DISCOVERY OF ALPACA.

WHEN the adventurous Pizarro advanced upon Peru and overthrew the last of the Incas, he found a rich and fertile country, the inhabitants of which were clothed in woollen garments of great beauty and delicacy. The texture of these garments was wholly different from anything that the Spaniards had ever seen before, and their love of finery prompted them to make careful inquiry into the nature of the material, and the process by which it was manipulated. They found that the beautiful robes and mantles worn by the natives were made from the wool of a species of sheep or camel indigenous to the country. This animal, of which there were four varieties —the Guanaco and the Vicuna, which were wild, and the Llama and the Pacos or Alpaca, which were domesticated—was unlike any fleece-

bearing animal of Europe, and had been kept from time immemorial by the Peruvians, its wool being valued for the lustre, transparency, and length of its fibre, and its flesh highly prized as an article of food. In 1534 Pizarro and his followers took with them to Europe, along with their treasures of gold and silver, a number of Alpaca fleeces and fabrics woven therefrom; but the Spaniards do not seem to have possessed the ability or industry necessary to take up the manufacture that was thus virtually put into their hands; for it was not until nearly three centuries later that any record is found of the manufacture of alpaca stuffs being seriously attempted in Europe. As has been shown in so many other instances, the barbarian has been hundreds, nay thousands, of years in advance of his civilised conqueror in the industrial arts.

From the time of Pizarro down to the beginning of the present century, the wool-producing ruminants of South America were permitted to remain comparatively unnoticed except by enterprising zoologists. Stray specimens found their way to European menageries; but no one

thought of adapting the long silky fleece of the alpaca to the purposes of manufacture. Various attempts were made to acclimatise this interesting animal in England from time to time, not for any value that was attached to its wool, but as a curiosity of natural history. The first alpaca seen in this country was the property of Mr. de Tastet of Halstead, in Essex, who had a specimen of the animal in his possession in 1809. It was afterwards exhibited for many years in the Surrey Zoological Gardens. The Duchess of York subsequently maintained four or five alpaca pets at Oatlands, and later still Viscount Ingestre, the Earl of Derby, Mr. Stevenson of Oban, Mr. Joseph Hegan of Liverpool, and others, tried the experiment of breeding them, but with only small success. It may now be considered as proved that the humidity of the English climate is unfavourable to the healthful existence of these animals..

The manufacture of alpaca fabrics had not yet spread beyond the confines of South America ; the European naturalists who had interested themselves so much in the habits of the docile and attractive ruminant had given little thought

to the utilisation of its fleece. But the man had already been born who, without any knowledge of what the ancient Peruvians had accomplished, was to discover and realise the true value of the wool of the alpaca. That man was Titus Salt, who was born in 1803 at Morley, near Leeds, in a quaint two-storied building known as the Old Manor House. His father, Daniel Salt, followed the pursuit of a farmer for some years, and shortly after the birth of Titus removed from Morley to Crofton, near Wakefield, and occupied a farm there. Agriculture, however, did not provide sufficient exercise for his energetic spirit; so after a while he relinquished farming altogether and migrated to Bradford, which was then just beginning to feel the influence of that wave of enterprise and industry which eventually carried it into the haven of manufacturing supremacy. Daniel Salt became a Bradford wool-stapler while yet his son Titus was receiving his educational training at the Heath Grammar School, Wakefield, and his business sagacity soon won for him a prominent position in the town.

This was a period of rapid development for

the industries of England. Steam-power had begun to assert its influence upon the manufactures of the north, and the age of industrial invention had set in with all its force. Every year saw some new mechanical contrivance or some fresh arrangement of material introduced, and commercial undertakings expanded and prospered to an extent that was wholly unparalleled. Daniel Salt saw that there was money to be made by the buying and selling of wool in those days, and he engaged himself so actively therein that, by the time his son Titus became old enough to take upon himself business duties, there was a good opening for the son as partner with the father.

Strange as it may appear to us now, young Salt did not look with favour upon the trade that his father was engaged in; he hankered more after the pastoral delights of a farmer's life, and liked not the smoke and din and bustle of factories and workshops. But, fortunately for himself and the world generally, he was not permitted to indulge his predilections; Daniel Salt saw that there was more to be done by a high-principled, energetic,

plodding young man in the commercial pursuits which were so speedily developing in Bradford than in the humdrum quietude of an agricultural career; so he insisted on his son adopting the wool business to begin with, and the firm of Daniel Salt & Son was the result, young Titus becoming a partner in the year 1834.

When once Titus Salt found himself established as a Bradford woolstapler, he gave his whole heart to the advancement of his business, and was soon a familiar figure in the wool marts of the kingdom, and acquired the good opinion of his fellow-traders as a straightforward and able man of business. Success seems to have attended his endeavours from the first; and in a very short time he must have seen that he had entered upon a far more profitable career than he could ever have hoped for, had he been allowed to follow the original bent of his mind and adopt the profession of a farmer.

Not long after the time of his entering into partnership with his father, he turned his attention to a particular description of wool called Donskoi, a Russian fleece which had

until then been solely employed in the woollen manufacture. This Donskoi wool, in which the Salts dealt very considerably, was regarded as altogether unsuitable for the purposes of the worsted manufacture; but young Salt, after testing it in various ways, formed a contrary opinion, and urged the Bradford spinners to make use of it. They declined to listen to his proposals, however; so, with that dogged determination of purpose which has characterised his whole business career, he resolved that, rather than abandon the idea, he would try the experiment on his own account, and he accordingly set up as a worsted spinner and manufacturer in an old mill in Silsbridge Lane.

It may be worth while explaining, at this point, what is the difference between worsteds and woollens. By the uninitiated, worsteds are nearly always called woollens, and Bradford men are frequently annoyed by this error being perpetuated in print, writers for the press seldom being able to appreciate the distinction between one class of goods and the other. Mr. Walter S. B. McLaren has recently defined

woollen and worsted yarns as follows: "A worsted yarn may be defined as a thread spun from wool, in which the fibres are arranged so as to lie smoothly in the direction of the length of the thread and parallel to each other. . . . A woollen yarn on the other hand, is a thread spun from wool in which the fibres are arranged so as to lie in every direction, and cross and overlap each other, that they may present their serrated surfaces in the greatest variety of directions." This crossing and overlapping of the fibres is the characteristic of woollen yarn, while the object of the worsted spinner is to have a smooth and level thread. It may be further explained that manufactured woollens comprise all descriptions of cloth, such as coatings, &c.; while worsteds include various kinds of stuffs which are used for ladies' dresses. There is a much greater combination of raw material in worsteds than in woollens.

It will now be understood how great the difficulty was for young Salt to persuade Bradford spinners that a wool that had hitherto been used exclusively in the manufacture of cloth could be made equally available for the making

of worsted goods. Mr. Salt, however, soon showed the Bradford spinners that he was on the right tack; for he manipulated the Donskoi wool with complete success, and produced good marketable worsted stuffs therefrom. Bradford was surprised and delighted, and the reputation of young Salt as a shrewd, far-seeing man of business was firmly established. The importation of Donskoi wool for use in the worsted trade began from that time, and increased year by year until it came to form a considerable item of the foreign wool that passed through the hands of the Bradford woolstaplers.

Meanwhile a few persons here and there were attempting to make a marketable commodity of the fleece of the alpaca. On the return of the British troops from the attack on Buenos Ayres in 1807, they brought a few bags of alpaca-wool with them, and it was submitted for inspection in London. Mr. William Walton, who published a work on the alpaca, alludes to this particular wool, and says, "Owing to the difficulty of spinning it, or the prejudice of our manufacturers, it did not then come into notice." The first person in England who succeeded

in producing a marketable fabric from this material was Mr. Benjamin Outram, a manufacturer of Greetland, near Halifax; who, after much trouble, produced an article which ladies bought at high prices for carriage shawls and cloakings, but which was valued more as a curiosity of manufacture than as a permanently attractive material. In the goods that Mr. Outram produced there was little of the lustre and fineness which have distinguished the more recent manufactures of this class; and, after a short time, he relinquished the idea of ever being able thoroughly to utilise the wool of the alpaca. Messrs. Wood & Walker were the next to try their hands upon the South American fleece, and they spun a quantity of it for the Norwich camlet trade; it was also sometimes used instead of English "hog" wool for certain fine warps. In 1832 some gentlemen interested in South American commerce paid a visit to Mr. James Garnett of Clitheroe, who did business with that part of the world; and in the course of their conversation on trade he suggested that they might possibly find it profitable to try and create a market for the wool of the

alpaca in this country, and offered, if they would send him a few pounds of the fibre, to have experiments made with it, so that its value might be thoroughly tested. Some months afterwards Mr. Garnett received a few samples of alpaca-wool from his friends the South American traders, and he forwarded it without delay to Messrs. Horsfall of Bradford, with instructions to make it into "pieces." They did as they were desired, and in due time an alpaca "piece" was produced, resembling a heavy camlet in texture, and was shown to various merchants. Neither the appearance nor the price of the article, however, was such as to command the favourable opinion of the merchants, and Messrs. Horsfall did not continue their experiments.

In that same year Messrs. Hegan, Hall & Co., wool-importers of Liverpool, had their attention directed to the wool of the alpaca, and they ordered their agents in Peru to forward them certain quantities to Liverpool. Parcel after parcel of wool was then shipped to the Mersey ; but not much of it made its way beyond the warehouses of Messrs. Hegan & Co. A few

Bradford manufacturers experimented with it so far as to make a few figured "pieces" in which alpaca was used for the weft, and worsted for the warp; but their manufacture was soon abandoned, the goods not suiting the public taste. In fact, it appeared pretty conclusive that alpaca was entirely unmarketable, and Messrs. Hegan & Co. began to regret having invested so largely in the Peruvian wool.

In 1836, however, Mr. Titus Salt, during one of his frequent wool-buying expeditions, accidentally fell in with Messrs. Hegan & Co.'s unsaleable stock of alpaca-wool, and from that time there was hope for the long-despised fibre. Charles Dickens many years ago described this fortunate discovery in his happiest vein in the pages of *Household Words*, and it is impossible to resist the temptation of reproducing his account.

"A huge pile," says Dickens, "of dirty-looking sacks filled with some fibrous material which bore a strong resemblance to superannuated horsehair or frowsy elongated wool or anything else unpleasant and unattractive, was landed in Liverpool. When these queer-looking bales had

first arrived, or by what vessel brought, or for what purpose intended, the very oldest warehouseman in Liverpool docks couldn't say. There had once been a rumour—a mere warehouseman's whisper—that the bales had been shipped from South America on spec, and consigned to the agency of C. W. & F. Foozle & Co. But even this seems to have been forgotten; and it was agreed upon by all hands, that the three hundred and odd sacks of nondescript hair-wool were a perfect nuisance. The rats appeared to be the only parties who at all approved of the importation; and to them it was the very finest investment for capital that had been known in Liverpool since their first ancestors had migrated thither. Well, those bales seemed likely to rot, or fall to the dust, or to be bitten up for the particular use of family rats. Brokers wouldn't so much as look at them. Merchants would have nothing to say to them. Dealers couldn't make them out. Manufacturers shook their heads at the bare mention of them; while the agents of C. W. & F. Foozle & Co. looked at the bill of lading, and once spake to their head clerk about shipping them to South America again. One

day—we won't care what day it was, or even what week or month it was, though things of far less consequence have been chronicled to the half-minute—one day, a plain business-looking young man, with an intelligent face and quiet reserved manner, was walking along through those same warehouses at Liverpool, when his eyes fell upon some of the superannuated horse hair projecting from one of the ugly dirty bales. Some lady rat, more delicate than her neighbours, had found it rather coarser than usual, and had persuaded her lord and master to eject the portion from her resting-place. Our friend took it up, looked at it, felt it, smelt it, rubbed it, pulled it about; in fact, he did all but taste it, and he would have done that if it had suited his purpose—for he was ‘Yorkshire.’ Having held it up to the light, and held it away from the light, and held it in all sorts of positions, and done all sorts of cruelties to it, as though it had been his most deadly enemy, and he was feeling quite vindictive, he placed a handful or two in his pocket, and walked calmly away, evidently intending to put the stuff to some excruciating private tortures at home. What particular experiments

he tried with this fibrous substance I am not exactly in a position to relate, nor does it much signify ; but the sequel was, that the same quiet business-looking man was seen to enter the office of C. W. & F. Foozle & Co., and ask for the head of the firm. When he asked that portion of the house if he would accept eightpence per pound for the entire contents of the three hundred and odd frowsy dirty bags of nondescript wool, the authority interrogated felt so confounded that he could not have told if he were the head or tail of the firm. At first he fancied our friend had come for the express purpose of quizzing him, and then that he was an escaped lunatic, and thought seriously of calling for the police ; but eventually it ended in his making it over in consideration of the price offered. It was quite an event in the little dark office of C. W. & F. Foozle & Co., which had its supply of light (of a very inferior quality) from the grim old churchyard. All the establishment stole a peep at the buyer of the ‘South American stuff.’ The chief clerk had the curiosity to speak to him and hear his reply. The cashier touched his coat-tails. The book-keeper, a thin man in

spectacles, examined his hat and gloves. The porter openly grinned at him. When the quiet purchaser had departed, C. W. & F. Foozle & Co. shut themselves up, and gave all their clerks a holiday."

The "quiet purchaser" was young Titus Salt, and "C. W. & F. Foozle & Co." were Messrs. Hegan, Hall & Co. That first transaction proved a good day's work for both buyer and sellers. Mr. Salt took the coach back to Bradford; and through the long dark evenings of the next few months the old mill in Silbridge Lane might be seen lighted up, and while mysterious figures flitted to and fro amongst the looms and spindles, few understood the deep import of all this night-work and secret experimenting. As time wore on, however, it was noised abroad that Titus Salt, the man who had converted Donskoi wool to the purposes of the worsted trade, had made another discovery of even greater importance. It was said that this time he had discovered a new fibre which was to revolutionise the trade. But when it came to be known that the fibre in question was nothing but the oft-tried and much-maligned alpaca which so many spinners

and manufacturers had previously failed to work up into a presentable fabric, the enterprising speculator was sneered at considerably. Titus Salt, however, could afford to laugh at the sneers of his neighbours, for the more he experimented with the “frowsy nondescript hair-wool,” the more beauty he discovered in it; its long staple and bright lustrous appearance foreshadowed in his mind a new soft and delicate material which should almost vie in attractiveness with silk. The only difficulty was to bring the wool completely under the subjection of his machinery; and he adapted and adapted, altered and invented, until in the end the Peruvian fleece became as amenable to the operations of the machine as the wool of the English sheep. For a long time he lingered on the threshold of success, working and hoping and despairing in turns; while at last he effected the true combination, and the world was made aware that it possessed a new fabric. He was not long in surmounting the difficulties of combing and spinning the alpaca-wool, and formed it into beautiful “slivers;” it was when he came to the weaving process that he was brought to a

stand. He tried alpaca-warp and alpaca-weft to begin with ; then warps of woollen and worsted were put into combination ; and all these failing to produce a satisfactory result, he bethought him he would try cotton-warps, which were then being rapidly introduced into the general worsted trade. Cotton-warps gave the required result ; the problem was solved. He was now able to produce alpaca pieces which would match in lustre and delicacy of texture the primitive garments made centuries before by the people of Peru, and at a price that would insure their being marketable. Now the drapers' shops-windows of all our large towns began to exhibit dress-pieces of the new material, glossy, soft, and elegant, and it speedily sprang into public favour. Orders for the new goods followed each other in quick succession, and Mr. Salt soon found that to keep pace with them he would require to enlarge his sphere of operations. He removed to larger premises, and his business extended so much that mill after mill was taken by him, until we find him carrying on his new manufacture simultaneously at four separate mills in different parts of Bradford.

During those first few years of the alpaca manufacture, Mr. Salt must have made an enormous profit. Many other manufacturers entered into competition with him, as was to be expected when they saw what could be done with alpaca; but for several years Mr. Salt retained the chief part of the trade in his own hands.

Some idea of the growth and extent of the alpaca manufacture may be gathered from the various statistics which have been published from time to time. From 1836 to 1840 the quantity of alpaca wool imported into this country averaged 560,800lb. per annum. By 1852 the quantity imported had increased to 2,186,480lbs.; in 1872, twenty years later, the importation stood at 3,878,739lbs. It is worth while noting the advance of price which has been maintained in regard to this commodity since it was taken in hand by young Titus Salt. The price given by the "quiet purchaser" was 8d. per lb.; a year or two afterwards it was 1s. per lb.; in 1856 it had advanced to 2s. 6d.; and has since then sometimes reached as high a price as 3s. per lb.

But, in spite of this marked increase in the price of the raw material, the manufactured goods can now be purchased more cheaply than at any previous period, a fact which will serve to indicate the very large profit that must have been made while the alpaca manufacture was in its infancy.

For several years subsequent to what may be termed the discovery of alpaca, Mr. Salt applied himself with untiring industry to his business, and took little part in public affairs. His whole soul was wrapped up in his work, and the success which he achieved has rarely been paralleled in modern times. Of "fortunes made in business" his has been one of the greatest of our day; and the philanthropic spirit in which he has dispensed his riches has entitled him to be regarded as one of the noblest benefactors of the century.

In 1844 Her Majesty the Queen desired Mr. Salt to execute a little order for her. On the Royal farm at Windsor two animals of the alpaca breed were kept, and their fleeces were sent to Mr. Salt to be manufactured into dress-pieces, the Queen having by this time heard

and seen a good deal of the new material. The fleeces weighed $16\frac{1}{2}$ lbs., and when sorted and combed, yielded 1lb. of white and 9lb. of black wool. From these samples Mr. Salt manufactured an apron of marvellous beauty; a striped figured dress, the warp being of rose-coloured silk and the weft of white alpaca; a plain dress, fifteen yards in length, and containing only two and a half pounds of alpaca; a plaid alpaca dress of novel design; and a woollen alpaca dress. These things so delighted Her Majesty that alpaca was constituted an article of the Royal costume, and became a fashionable fabric.

Mr. Salt's position in the commercial world was now assured. He had made a bold stroke, and he had won. Many men would have rested here, and, secure of a handsome fortune, would have retired from the turmoil and excitement of business. But Mr. Salt was a born worker, and could not think of taking refuge, in a life of idleness while yet a comparatively young man. Relaxation of some kind, however, is necessary to us all, and Mr. Salt sought it in public duties, duties which

his fellow-townsmen were most anxious for him to assume. His kind and generous disposition, and the sturdy honesty of his character, admirably fitted him for the impartial discharge of those functions which are usually intrusted to a town's principal citizens. Bradford was incorporated in 1847, and prior to that time Mr. Salt served the town in the capacity of Chief Constable. On the charter of incorporation being granted, he was made senior alderman, and was appointed one of the first justices of the peace for the borough. In the following year he was chosen Mayor, and during his term of office enjoyed great popularity. Meanwhile, he had a young family growing up around him, having, as early as 1829, married Caroline, the daughter of Mr. George Whitlam of Grimsby. This lady bore Mr. Salt eleven children. Mr. Salt lived an active life in the decade from 1840 to 1850, apportioning his time between the exciting pursuits of business and the responsibilities of a public career, and beyond this honourable mode of existence it was not generally imagined that he could expect to go. He had attained what to most

men would have been the very summit of ambition, and there seemed to be little left for him to achieve.

But in 1851 Mr. Salt conceived the idea of founding an industrial colony of his own, wherein he could carry out certain long-cherished ideas, for the social and moral improvement of the working classes. He had witnessed the protracted and arduous crusade on behalf of the factory children, which ended in the Ten Hours' Bill; and he had not failed to observe the evil results of close employment day by day in unhealthy workrooms. Thus, keenly alive to the desirability of bringing about a better condition of labour, and of inducing greater harmony between employer and employed, he cast around for a favourable spot upon which to build his colony. His Bradford mills were old and dingy and dilapidated, and it must often have pained him to see that his own workrooms were much more cramped and unwholesome than was good for his *employés*. He determined, therefore, to break away from these unpromising surroundings and start anew under the most favourable circumstances that

his thoughtful and considerate mind could suggest. He must either do this, he felt, or retire from business altogether and enjoy his ample fortune in the best way he could. Fortunately, he elected to carry forward his new business project, and in 1851 he pitched upon a picturesque and suitable spot in the romantic valley of the Aire, about three miles from Bradford, and there commenced building a factory on a scale of magnitude which the world had never heard of before. For the next two years the sight now occupied by Saltaire presented a busy scene, a large army of workers being engaged in the realisation of Mr. Salt's gigantic conception; and on September 20th, 1853, Mr. Salt's fiftieth birthday, the immense "palace of industry" was opened, a grand inaugural banquet being held in the combing-shed, a room which provided sitting accommodation for 3,500 guests. Never was known such an industrial banquet. Amongst the guests were 2,440 of Mr. Salt's workpeople, who had been brought from Bradford by special train, and several noblemen and members of Parliament graced the banquet

with their presence. The new factory was likened to the palaces of the Cæsars, and for a time the public press busied itself diligently in describing the wonders of the place and the munificence of its founder. The illustrated papers gave views of Saltaire from all conceivable points; and poets chanted the praises of the edifice, and of the man who had planned it, in songs, odes, and lays innumerable. One of the best of the poetic compositions referred to was specially written for the occasion, at the instigation of the workpeople, by Mr. Robert Storey, a gentleman who was known as "the Craven Poet," and who had won the patronage and friendship of the Duke of Northumberland. It was entitled "The Peerage of Industry," and the particular chord of sentiment that it struck may be sufficiently instanced by a quotation of the first few lines, which ran as follows :

" To the praise of the peerage high harps have been strung,
By minstrels of note and of fame;
But a peerage we have to this moment unsung,
And why should they not have their name ?

Chorus.

" For this is his praise—and who merit it not
Deserve no good luck should o'ertake them—
That while making his thousands he never forgot
The thousands that helped him to make them !

"Tis the peerage of Industry! Nobles who hold
Their patent from Nature alone;
More genuine far than if purchased with gold,
Or won, by mean arts, from a throne!"

This may not be very high-class poetry; but it expressed the feelings of the people, and was received with enthusiasm.

Sir William Fairbairn, under whose direction the engineering work in connection with the Saltaire factory was executed, has thus described this notable industrial establishment: "The Saltaire mills," he says, "are situated in one of the most beautiful parts of the romantic valley of the Aire. The site has been selected with uncommon judgment as regards its fitness for the economical working of a great manufacturing establishment. The estate is bounded by highways and railways which penetrate to the very centre of the buildings, and is intersected by both canal and river. Admirable water is obtained for the use of the steam-engines, and for the different processes of the manufacture. By the distance of the mills from the smoky and cloudy atmosphere of a large town, unobstructed and good light is secured; whilst, both by land and water, direct communication is gained for the

importation of coal and all other raw produce on the one hand, and for the exportation and delivery of manufactured goods on the other. Both portage and cartage are entirely superseded; and every other circumstance which could tend to economise production has been carefully considered."

For simple beauty of situation Saltaire is almost unequalled. The great stone factory, so familiar to the railway-traveller who takes the Midland route to the North, has a frontage of 545 feet, and is six stories in height. It covers an area of ten acres, and is arranged in the form of the letter T. The Leeds and Liverpool canal washes one side of it, and a few yards lower down flows the pleasant Aire; while the Midland line runs close to the front of the building. An immense iron bridge, on a level and in a line with the main street of the town, stretches completely across railway, canal, and river, terminating at the entrance to the Saltaire Park, beyond which rise the wooded hills of Baildon and the rocks of far-famed Shipley Glen; and to the right and left of the landscape stand the castellated mansions of Mr. Titus Salt, jun., and Mr. Charles Stead, partners

in the Saltaire firm. It was at Milner Field, the residence of Mr. Titus Salt, jun., that the Prince and Princess of Wales stayed on the occasion of their visiting Bradford in June, 1882, to open the new Technical College. The dignity of Labour and the poetry of Nature have seldom been so happily intermingled as at Saltaire. The Italian style of architecture has been adopted, more or less, in all the buildings, from the factory down to the workpeople's cottages; even the tall chimney which stretches skyward to the height of 250 feet has the appearance of a southern campanile; and altogether the little town is both an architectural and a sanitary triumph. About four thousand operatives are employed at the works, and the provision that has been made for the comfort and social and mental improvement of them and their families is probably greater than was ever provided for any other community by a single man, and stamps the projector as one of the leading philanthropists of his time. Saltaire, contains 800 dwelling-houses, all regularly and uniformly built of stone, and covering altogether an area of nearly twenty-six acres. Many of the houses have small plots of garden, and present a

cheerful and picturesque appearance. The streets are all laid out in straight lines, and are clean and well-paved. The public buildings of Saltaire, however, are its chief boast, apart from the Leviathan factory. There is a Congregational church, which cost 16,000*l.*, and contains the Salt family mausoleum, which is enriched by some fine sculpture executed by Mr. Adams-Acton. Then there are schools, especially designed for Sunday instruction, built at a cost of 10,000*l.*; a literary institute, with a library of several thousand volumes, and containing lecture-halls, class-rooms, billiard-rooms, gymnasium, &c., built and furnished at a cost of 25,000*l.*; baths and wash-houses, upon which 7,000*l.* was expended; forty-five almshouses, capable of accommodating seventy-five persons, and provided with suitable endowment; and a fine park, fourteen acres in extent—all these are amongst the institutions and benefactions which the founder of Saltaire gave to his unique and picturesque alpaca colony. Everything that an enlightened and generous mind could conceive for the instruction and recreation of his workpeople was provided, till the town of Saltaire has come to be regarded by visitors with no less wonder

than the “works” themselves. One restriction only has been insisted upon, and that is, that no house for the sale of intoxicants should be opened in the town. Thus we have a community of some six thousand people existing in peace and harmony without a single beerhouse or public-house in their midst. True, there are a few houses of this description planted temptingly on the borderland of the colony ; but the Salts may be considered practically to have proved that the public-houſe is not a necessity of existence, for it is an undeniable fact that there is next to no drunkenness amongst this model community. Add to this, that the death-rate of Saltaire is low, that its criminal statistics are almost a blank page, that rents and taxes are moderate, and we have a sort of working-class commonwealth which is fit to rank with the Utopias of the philosophers, or even the Hygienic dreams of such men as Dr. Richardson. The founder of Saltaire omitted nothing that would conduce to the comfort and well-being of his people ; such high and noble aims as his have seldom been associated with a commercial undertaking, or carried out with such sincerity of purpose. Saltaire, indeed, is one of

the brightest landmarks of the industrial history of our time.

From the period of the opening of the Saltaire mills there were associated with Mr. Salt in the conduct of his gigantic business some of his sons, as well as one or two other gentlemen who had held positions of management in his mills at Bradford. The sons—George, Edward, and Titus—have displayed much of the business sagacity and enterprise for which their father was remarkable; and their co-partner, Mr. Charles Stead, has, by his unremitting energy for the last quarter of a century, materially assisted in the sustainment of Saltaire's commercial greatness.

During the time that followed the building of Saltaire, Mr. Salt gave himself up more zealously than ever to the promotion of the public good. He was always to the front in any philanthropic work, and his charity was unbounded. It is estimated that, simply in benefactions that were publicly acknowledged, setting aside his private charities, which were known to be great, he gave away not less than half a million sterling. Amongst his most memorable gifts for charitable purposes may be mentioned a donation of 5,000*l*.

to the Bradford Fever Hospital, a gift of 5,000*l.* to the Royal Albert Asylum at Lancaster, 5,000*l.* to the Sailors' Orphanage at Hull, 5,000*l.* to the London Congregational Memorial Hall, 2,500*l.* towards a new Congregational church at Scarborough, 1,000*l.* to Peek Park, Bradford, 5,000*l.* to the Bradford Infirmary, 5,000*l.* to the Liberation Society, 1,800*l.* to the Pastors' Retiring Fund, and 11,000*l.* to the Bradford Grammar Schools for scholarships. He gave handsomely all round; any cause that was in itself commendable, no matter by what sect or party it was promoted, was sure of his support. By his will his munificence was largely extended, a great number of charities being made recipients of his bounty. The provision he made for Saltaire alone was princely. He not only liberally endowed the schools there, and provided for their being carried on in the most efficient manner, but left a fund of 30,000*l.*, the income of which was to be appropriated for the benefit of the sick and aged poor of Saltaire and the neighbourhood, thus leaving an adequate endowment for the maintenance of the residents in the almshouses. It has been given to few men to amass so large a share of wealth as was got

together by Titus Salt ; fewer still have made such splendid use of an enormous fortune.

After the establishment of Saltaire, Mr. Salt did not withdraw himself from Bradford life, but continued to manifest a strong interest in the place where he had laid the foundation of his fortunes. In 1857 he was urged to allow himself to be put into nomination as a candidate for the representation of Bradford in Parliament, but he withdrew from the contest rather than divide his party, his friend, General Perronet Thompson being one of the candidates. In 1859, however, at the general election of that year, he was again pressed to permit himself to be brought forward, and, there being then no question of dividing his party, he consented, and was returned along with Mr. H. W. Wickham. It was never expected that a man of such unassuming manners and so little gifted with oratorical ability as Mr. Salt would blossom into a parliamentary luminary ; but it was felt that he had earned the right to be accorded the highest honour that the town could give him, and the people elected him. Parliamentary life, however, was so utterly at variance with all his previous experience, and so little harmonised with his estab-

lished habits, that he cannot be said to have taken to it at all kindly. He was out of his element. He had so long accustomed himself to the rattle of looms, the whirr of spindles, the surroundings of toiling men and women, and the sight of vast expanses of machinery, that he found it difficult to fit in with this totally different mode of life. He had accepted the post, however, and so long as he retained it he would endeavour, to the best of his ability, to fulfil its duties. "His seat in the house," says Mr. Balgarnie, "was always occupied, and his name found on every division list. But within the walls of St. Stephen's his voice was never heard, except on some formal occasion, such as the presentation of a petition. To him it was a scene widely different from that with which he had long been familiar. Speaking had always been his weak point; but here it was his chief business. Early rising and retiring had been the rule of his life; now the long sittings, the heated atmosphere, irregular hours, both of diet and sleep, the exciting debates and divisions, were enough to exhaust any man's energies, much more his, so unaccustomed to such an experience." The upshot was that, after having endured this strain upon his health for

about two years, he resigned his seat ; and, in 1861, Mr. W. E. Forster was elected, without opposition, to fill his place, and Mr. Salt went back to his old life.

In 1867 Mr. Salt received from the Emperor of the French the decoration of the Legion of Honour. In 1869 Her Majesty conferred the distinction of a baronetcy upon him, and thenceforward the title of the Saltaire firm was “Sir Titus Salt, Bart., Sons & Co.”

In conveying the intimation of the Queen’s offer to Mr. Salt, Mr. Gladstone said, “Though we have not been so fortunate as to keep you within the precincts—perhaps I ought to say the troubled precincts—of parliamentary life, you have not failed by your station, character, and services, to establish an ample title to the honourable distinction which it is now my gratifying duty to place at your disposal.”

The high esteem in which Sir Titus Salt was always held by his workpeople has been repeatedly manifested. In 1856 they presented him with a colossal bust of himself ; and in 1871 the people of Saltaire presented him with his portrait, painted by Mr. J. P. Knight, R.A., which was subsequently

deposited in the Institute at Saltaire, and is a work of considerable merit. At the same time, "the children of Saltaire" presented the baronet with two silver-plated breakfast dishes.

On his part, Sir Titus Salt was never wanting in demonstrating the regard in which he held those who laboured for him ; and on two memorable occasions he invited the whole of his workpeople to feast with him and his family at his own home. On the occasion of his birthday in 1856, when the bust was presented to him, he treated his workpeople to the number of 3,000 to a sumptuous banquet at Crow Nest, his residence, and there was great rejoicing. In 1873, the twentieth anniversary of the opening of Saltaire and his seventieth birthday, Sir Titus Salt gathered his workpeople around him once more at Crow Nest, and in greater numbers than before, the establishment at Saltaire having expanded since 1853. On September 20th, 1873, no fewer than 4,200 guests were entertained by Sir Titus, three special trains being chartered to convey them.

In 1874 Bradford erected a public statue, at a cost of 3,000*l.*, to Sir Titus Salt—a very unusual honour to be paid to a man during

his lifetime. The Duke of Devonshire undertook the duty of unveiling the statue, and many thousand people assembled to witness the ceremony. The late Lord F. Cavendish, M.P.; Mr. Samuel Morley, M.P.; Mr. John Crossley, M.P.; Mr. H. W. Ripley, M.P.; and many other distinguished persons, were present on the occasion, and all joined in bearing testimony to the noble qualities of the man whose good deeds they were commemorating. The erection of this statue was an act which Sir Titus Salt would fain had been postponed until he had passed away.

Sir Titus Salt's health began to decline in the early part of 1876, and his visits to Saltaire became less frequent. On Friday, December 29th, in that same year he died, at Crow Nest; and on January 6th, 1877, his remains were consigned to their last resting-place in the family mausoleum at Saltaire, and such a funeral was given him as has seldom been witnessed, over 100,000 people assembling in the streets of Bradford to see the funeral *cortége* pass.

Thus ended the life and labours of a true

Englishman, whose business enterprise and sagacity built him up a princely fortune, whose charitable deeds placed him amongst the foremost philanthropists of this or any other age, and whose memory will be warmly cherished in this country as long as true worth and high example continue to be reverenced. As the creator of a new industry he has been the means of adding, in a remarkable degree, to the manufacturing eminence and commercial wealth of the country, but especially of the district which derived, in the first instance, the direct benefit of his skill and enterprise.

The present owners and managers of Saltaire carry on the works and uphold the town and its institutions with the same regard to the social and moral elevation of the people as was evinced by their founder; and Saltaire still remains one of the chief industrial wonders of the world, and is an enduring monument to the true greatness of a commercial leader and a Christian gentleman.

The present baronet is Sir William Henry Salt, of Maplewell, near Loughborough, who

was born in 1831, and did not adopt a commercial career. In 1854 he married Emma Dove Octaviana, the only child of Mr. John Dove Harris, of Ratcliffe Hall, Leicester. Sir William Henry Salt is a magistrate for the West Riding of Yorkshire, and for Leicestershire, a deputy lieutenant of Leicestershire, and high sheriff of the latter county.

THE PEASES OF DARLINGTON.

THE PEASES OF DARLINGTON.

THE industrial annals of this country afford few more interesting chapters than the story of Edward Pease's connection with George Stephenson, in those now seemingly distant days when the Killingworth engine-wright was fighting his way to the front, modestly yet persistently, with his new idea, the locomotive. The combination of two such practical minds on one undertaking hastened forward the railway system in a very remarkable manner. One was the calm far-seeing projector; the other was the man of infinite invention and resource, ready to carry out those great plans which he had satisfied himself were feasible, but which the world generally regarded as dangerously revolutionary, and to a great extent Utopian. In 1817 Edward Pease, in the face of strong opposition, appealed to the public to assist him

in forming a company for the promotion of a railway between Stockton and the West Auckland coal-field; but the public fought shy of the project, and if it had not been that Mr. Pease's own family and immediate friends had embarked in the enterprise with him, the title of "the father of railways," which was subsequently given to Mr. Pease, would in all probability have had to be shifted on to some later projector. But Edward Pease, when once he had taken a thing in hand, and made up his mind that it was expedient and practicable, was not given to withdrawing from it; so, before he had ever seen George Stephenson, he had made his application to Parliament for sanction to his scheme, and would have had his railway in course of formation but for the powerful objection raised by Lord Darlington (afterwards Duke of Cleveland) that the proposed line would pass through one of his fox-covers. Lord Eldon, moreover, was an uncompromising opponent of the Bill, and was the chief instrument in getting the Bill thrown out, which, it must be remembered, was in its original form nothing more than a private trading Bill. We have it on

the authority of Earl Grey (as related in Hayward's *Biographical Essays*) that Lord Chancellor Eldon was seen one morning making alterations in a private Act of Parliament whilst on his knees at prayers in the House of Lords. That Act was the first Railway Bill. Parliament in those days was stronger on the side of the fox-hunters than on that of the railway promoters; and no wonder, remembering the apathy, if not open hostility, of the commercial classes—the people who were destined to derive the greatest benefit from the project. The Duke of Cleveland, therefore, succeeded in getting his brother peers to throw out the Railway Bill in 1818; but in the following year, when Mr. Pease had chalked out a new route for his line, between Stockton and Darlington, steering clear of the Duke's cover, Parliament was induced to accept the scheme. In 1821, when the royal assent had made the Bill law, the work of construction was proceeded with. It was at this stage that George Stephenson came over from Killingworth to Darlington, and tried to interest the good Quaker in his new machine, the steam-horse. Up to this point, the projector of the

first railway had had no idea of providing any motive-power other than horses ; the rails were his leading feature ; the locomotive had not even been thought of in connection with the Stockton and Darlington scheme. When Stephenson waited upon Mr. Pease, however, and, in that Northumbrian dialect which never left him, sought Mr. Pease's adoption of the new engine for the new line, and when Mr. Pease promised to run over to Killingworth to see George's locomotive for himself, the first link in the mighty railway chain, which was thereafter to stretch over all the countries of the world, was forged. Mr. Pease went, saw the engine, approved of it, and from that time the Stockton and Darlington Railway project began to assume, in the eyes of onlookers, a more chimerical aspect than ever. Edward Pease became a convert to the locomotive, and an amended Act of Parliament was obtained in 1823, empowering the company to employ locomotives on their lines, under certain restrictions. From that time the interests of Edward Pease and George Stephenson were in a great measure identical. Mr. Pease assisted Stephenson—now appointed the engineer

of the new line at a salary of 300*l.* a year—to found his locomotive factory at Newcastle, and in many other ways helped on the mighty movement which both lived to see extended, with so much benefit to human progress, into every centre of industry throughout the kingdom.

Edward Pease may be said to have completed one career, however, when the railway project first engaged his attention. He was between fifty and sixty years of age when the Stockton and Darlington Railway was opened in 1825, and long before then he had earned a name and a fortune. He was descended (genealogy records) from a Yorkshire family at one time settled near the town of Barnsley, a branch of which family espoused the doctrines of George Fox, and for that departure were discarded from the old stock. One of the Barnsley Peases, it seems, married a certain George Cardwell, who settled at Darlington as a wool-comber. Mr. Cardwell was joined by his wife's nephew, Edward Pease, whom he subsequently adopted as his heir. For several generations the Peases had their woollen mills in Darlington, and it was in

these busy hives of industry that the railway pioneer received his business training. Some idea of the magnitude of the works carried on by the Peases in the early years of the present century may be gleaned from the fact that in 1817 a woollen factory of theirs that was burned down involved a loss of 30,000*l.*, and threw about five hundred workpeople out of employment. At this time Edward Pease was at the head of the concern, and managed it with rare skill and enterprise. Darlington was not then the important place that it is now ; still, it had served Edward Pease as a sufficient field for his energies, and, as far as Darlington could honour him, he was honoured. He was a man of quiet thoughtful ways, not given to manifesting himself too strongly in anything, but, despite his Quaker creed and simple habits, having force of character enough to make his influence widely felt. No other man could have accomplished what he succeeded in doing for the Stockton and Darlington Railway. Even with such a man at the head of the company it was only just possible to obtain assistance sufficient to enable the scheme to be floated ; and as it was,

the Bill would have been lost had not Mr. Pease boldly come forward, and advanced 10,000*l.* to make up the subscriptions to the amount necessary to be guaranteed before the Bill could be sent into committee. But his faith gradually inspired faith in others, and when the great problem came to be solved subsequently, his name stood higher than ever in the estimation of his fellow-men. "It is pleasing to relate," writes Dr. Smiles, in his interesting *Lives of George and Robert Stephenson*, "in connection with this great work—the Stockton and Darlington Railway, projected by Edward Pease and executed by George Stephenson—that when Mr. Stephenson became a prosperous and a celebrated man, he did not forget the friend who had taken him by the hand and helped him on in his early days. He continued to remember Mr. Pease with gratitude and affection; and that gentleman, to the close of his life, was proud to exhibit a handsome gold watch, received as a gift from his celebrated *protégé* bearing these words: 'Esteem and gratitude: from George Stephenson to Edward Pease.' "

From the time of the opening of the first

railway down to the time of his death in 1858, at the advanced age of ninety-one, Edward Pease continued to take a deep interest in the management of the line which he had founded, and lived his good life out in peace, honoured and revered by all who knew him. The year previous to his death a movement was set on foot for recognising, by some suitable memorial, the great work that he had accomplished, and at a public meeting of the inhabitants of Darlington it was resolved, "That, deeply impressed with the immense advantages of the exertions of Edward Pease, Esq., in promoting in the year 1818 the first public railway in the kingdom, and in subsequent years prosecuting the scheme of railway enterprise with indomitable perseverance, under difficulties almost inconceivable at the present day, it is expedient to record the facts by some testimonial as a proof of the estimation in which he is held in his native town of Darlington, its neighbourhood, and the district generally. That in consequence of such means of locomotion, sources of wealth have been developed, the entire kingdom advanced, and the comfort and convenience of

the public wonderfully increased, every railway company in Great Britain be communicated with in order to afford them the opportunity of co-operating in this national tribute to a man who still lives to witness, with the liveliest satisfaction, the result of his early labours. That, considering that Mr. Pease has directly and indirectly been the means of developing, to an extraordinary extent, the mineral wealth of this district in particular, and thereby stimulating every branch of trade and commerce in the country at large, communications be made with employers and employed, affording an opportunity to masters and operatives of assisting in a testimonial commemorating the services of that gentleman." The resolution is so unique in its form, and in the history it covers, that it is well worth putting on record. Had it been acted upon there is no doubt the response throughout the country would have been of the most liberal description. But it was not to be. Mr. Pease himself insisted upon being considered in the matter, and positively yet courteously commanded "that no such testimonial should be prepared or further thought

of." He further wrote to the chairman of the meeting, saying that his friends "had done him some injustice in doing him more than justice;" adding, "It seems to me that Providence has condescended largely to bless our designs and efforts for the good of the world, and that we have great cause to thank Him for the benefits He has enabled us to confer on humanity." But the public were not to be prevented altogether from expressing their good-will and admiration, for all that; so, on October 23rd, 1857, a representative deputation waited upon Mr. Pease, and presented him with an address in which were set forth, at some length, the qualities of head and heart which had won him so proud a place in the esteem of the people. Although couched in somewhat high-flown language, there are passages in the address which are worth quoting, if only for the summary of good works which they comprise. "Directly and indirectly," says the address, "by your sterling ability, fertile resources of invention, inexhaustible assiduity and the highest moral courage, you have been the means under God —who has hidden boundless riches in the earth,

but granted intellect to man for their development—of opening fresh avenues to science, encouraging every branch of trade and commerce, employing large bodies of operatives, and ameliorating the condition of all classes of society. To you, therefore, more than to any hero of any age, the thanks of a nation are due, and justly may you be termed ‘A pioneer of the peace.’”

Such a tribute as this indicates a degree of admiration very rarely met with in these days, and it is the strongest evidence of good works achieved. In the same year the first locomotive that ever went on a public line of railway, the “Locomotion,” the famous “No. 1 engine” was relegated to honourable retirement by being placed on a pedestal in front of the Darlington Railway Station, and Mr. Pease was asked to perform the ceremony of laying the foundation-stone for this pedestal; but his advanced age and increasing infirmity prevented him from complying with the request. In the letter that he wrote on that occasion, he referred with just pride to the part he had played in the promotion of railways. “Sanguine,” he wrote,

"and I may say sure, as I was of the value of railways when I first moved in their introduction with two or three able helpers, and such an engineer as the late celebrated George Stephenson (then first drawn from obscurity), their success and importance have far, very far, exceeded the most favourable anticipations, confidently sanguine as those anticipations were. With an ample repayment of satisfaction and pleasure, I cannot, in taking a retrospective view, regret the care and attention for three or four years given to the completion of our then unpopular work, opposed by magistrates, commissioners of turnpikes, &c., to the full of their power. Steady disinterested attention, without one shilling of fee or reward, brought our work, thankless and wageless, to its completion.

Mr. Pease died in the month of July, 1858, in the ninety-second year of his age; and when he came to be interred in the little cemetery of the Friends in Darlington, a very large assembly attended to mark their respect for the "father of railways," as they loved to call him.

Hereditary genius is not generally believed in; but whatever business capacity, enterprise,

and foresight had been revealed in Edward Pease seemed to be transmitted to his immediate descendants, for, even in the old man's lifetime, the younger branches of the family had become prominent in the industrial world, and helped forward to a wonderful extent the development of the resources of the great mineral district of which Darlington formed the industrial centre.

Joseph Pease, the second son of Edward Pease, became more of a public man than his father had been, and served his country with distinction in many capacities. He was associated with his father not only in the promotion of the Stockton and Darlington Railway, but, before that, in the woollen business, which he mastered in every branch. When the first railway was opened Joseph Pease was appointed treasurer thereof, and, under his management, the financial operations of the company were carried on with great success, the best testimony to which were the excellent dividends that were realised for the shareholders. But Joseph Pease looked further afield than the railway or his father's woollen mills ; he saw that the vast mineral capabilities of South Durham were as yet comparatively unworked, and that,

with the fresh facilities of transport which George Stephenson's inventive mind had provided, those capabilities could be made available for the profit and advantage of the commercial world generally. In 1828, therefore, we find Joseph Pease a partner in a colliery at Shildon, near Bishop Auckland; and in 1829 he was busying himself with the creation of a new port on the Tees for the shipment of coals, from which project sprang the town of Middlesbrough, since so famed for its ironworks. At that time, we are told, the site of the future town was nothing better than a dismal swamp, with just one single farmhouse standing upon it. Joseph Pease and his friends bought five hundred acres of this swamp, and, when they had obtained the consent of Parliament for the construction of a line of railway from Stockton to that place, they proceeded to make it habitable. Large coal-staiths were erected, and streets of houses sprang up with mushroom-like rapidity. Then came the opening of the new line, the advance of ships to the young port; and the mineral wealth of Cleveland had found another outlet into the industrial world, and the Cleveland men another source of riches.

Before ten years had elapsed a population of 6,000 persons had been attracted to Middlesbrough; and when, in addition to working the coal, they began to open up their immense stores of ironstone, a still further impetus was given to the industry of the place, and by the year 1861 the population had risen to 18,892,—to-day it has over 70,000!

Joseph Pease watched this remarkable transformation with such intelligent interest that he was able to make the advancement of his own fortunes and those of his family keep pace with the advancement of the town of which he was the principal founder. The simple proprietorship of a small share in the Shildon Colliery did not long content him; he bought and leased coal-field after coal-field, and soon became the largest coal-owner in South Durham. His business connections extended so greatly that there was ample work for him, his five sons, and his brother Henry in the management of the various concerns. He entered not less freely and heartily into the development of the iron trade than he had previously done into the coal trade; but in 1852 he was in the front of the movement, opening up

ironstone mines in various parts of the district, engaging his capital and his energy in the promotion of the new industry which was destined to bring marvellous increase of prosperity to Cleveland. Mr. J. S. Jeans, in his *Jubilee Memorial of the Railway System*, published in 1875, says : “In the raising of ironstone, as well as in the production of coal, the firm of J. & J. W. Pease speedily took a premier position. There is nothing more notable in the annals of that remarkable district than the unflagging enterprise with which they opened out one mine after another, until their operations reached a scale of magnitude which is still without parallel. The quantity of iron-ore raised from the mines of the firm has averaged more than a million tons per annum for the last ten years, while the total number of hands employed by them during that period—including both collieries and ironstone mines—has approached 10,000.”

Mr. Joseph Pease was, in his day, perhaps the most popular man in South Durham. That division of the county returned him as member of Parliament, after the passing of the Reform Bill of 1832, and again in 1835 and 1837, without

opposition. Mr. Pease being the first Quaker member sent to the House of Commons, and having scruples of conscience regarding the taking of the oath, he figured for a brief time before the country in some such attitude as that taken up in more recent times by Mr. Bradlaugh, though not in the same aggressive manner, or to his detraction. A committee was appointed, on the motion of Lord Althorp, to inquire into the precedents bearing upon the matter, and, in the end, Mr. Pease was permitted to take his seat, and the oath was, for the first time in parliamentary history, dispensed with. Before this course had been agreed to, his friends advised him to petition the House on the subject; and he is reported to have made this characteristic reply, "I will petition nobody; I am sent here according to the law of the land as representative in Parliament for South Durham, an important county constituency, and it shall never be said that South Durham in my person was brought down upon its knees to beg for its rights."

On taking his place in the House, Joseph Pease allied himself with the economists and the anti-slavery advocates, and rendered them memor-

able service. In those days there was much more to be done in Parliament than there is now for the amelioration of the condition of the people, and Joseph Pease was always to be found on the side of the philanthropists and the reformers. The heat and contention of parliamentary life, however, had not the same charm for him as business, and those who knew him best were not surprised that at the general election of 1841 he should have decided to retire from the representation of South Durham. He ever afterwards declined to allow himself to be put in nomination, although frequently desired so to do. But he never wearied of doing good. He held the office of President of the Peace Society for many years, and in the cause of education he gave of his time and money most liberally. His charity was unbounded. In 1870 he built the Southend Schools, Middlesbrough, at a cost of 5,000*l.*, and in the same year subscribed 3,000*l.*, to the North of England Agricultural Schools. During the last few years of his life, Joseph Pease suffered much from an optical affliction, and in 1865 became totally blind. He died in February, 1872, in the seventy-third year of his age, and

was buried by the side of his father in the Friends' cemetery at Darlington. A handsome bronze statue of him now occupies the most commanding position in his native town.

The only other son of the "father of railways" who filled any considerable part in the industrial history of South Durham was Henry Pease, the youngest son, who was born in 1807. It was at first intended to make a tanner of him, and he was brought up to that business. But a man of such energy of character was not likely to escape being caught by the railway fever which raged around him with so much fierceness in his early manhood; so, no sooner had he attained his majority than he broke away from the leather trade, and entered heart and soul into the work of railway promotion. Henry Pease's name came to be connected with nearly all the lines of importance that were projected in the north of England, some of which were originated by him; and perhaps no man of his time had a longer or more distinguished career as a railway director, he having for over forty years been unremitting in his attendance in the board-room of one railway or another, although in his later

years his services were principally engaged on behalf of the North-Eastern Company. He was always alive to the necessities of the time, prompt to devise new routes and extensions, and it has been said of him that he never originated a line which had afterwards to be condemned. He was associated with his brother Joseph in the formation of the branch line from Middlesbrough to Guisbrough, and was the first chairman of that railway. Subsequently he took a main part in originating and carrying forward a scheme for the making of a line between Darlington and Barnard Castle, and was appointed vice-chairman of the company. On July 20th, 1854, the first sods were cut by the Rev. T. Witham, the chairman, and Mr. Pease, the latter cutting his sod in his shirt-sleeves amidst the deafening cheers of at least ten thousand spectators. They had had a long and hard fight in getting their Bill through Parliament, the ducal house of Cleveland once more blocking the way of progress; and when success was at last achieved the enthusiasm of the people knew no bounds. Two years afterwards, when the railway was opened to the public, and another

great celebration took place, the Duke of Cleveland made the *amende* by attending the banquet, and expressing a hope that all past differences might be forgotten and forgiven. Henry Pease was returning from a visit to the United States at the time that his favourite line was being opened; but as soon as he landed he made his way to Barnard Castle, surveyed with satisfaction and delight the work that had been so speedily and so successfully accomplished, and straightway set his mind to devise a further railway from this new centre. He determined upon projecting a line from Barnard Castle to unite with the Lancaster and Carlisle Railway; and on August 20th, 1856, a month after the opening of the Darlington and Barnard Castle line, a first meeting of promoters of the new undertaking was held, and the scheme was launched before the public. The country through which the proposed line was to pass was a wild, dreary, mountainous region, which presented many obstacles to the engineer; but Henry Pease was not a man to be daunted by difficulties of this description, and therefore the South Durham and Lancashire Union Railway came to be entered

upon. The new line had many powerful recommendations. It would be the means of opening up ready communication between the Durham coal-fields and iron-mines with the densely populated manufacturing districts of Lancashire, and of providing direct communication between the Cleveland district and the main northern line. So, for the sake of the result that it promised, the enterprise was warmly taken up, and as soon as the necessary Act of Parliament had been obtained (this time without opposition) the undertaking was proceeded with. The difficulty of carrying the line across the Stainmoor range of hills was undoubtedly great; but by careful engineering the railway was taken over the summit of the moorland, 1,374 feet above the level of the sea, and down again into the picturesque valley of Kirkby Stephen, on the other side, and from that point was continued forward to Tebay, where a connection with the London and North-Western line was formed. Cleveland and Barrow-in-Furness were to be linked by the new railway also, and altogether there were the most formidable reasons for constructing it. In August, 1857, the first sod was cut, and four years afterwards—in

1861—the line was formally opened, and the development of the Cleveland district then proceeded at a more rapid pace than ever. It was stated that in 1875 no less than fifteen thousand tons of coal and coke passed over this line from South Durham. After the new railway was opened several convenient amalgamations were effected, at the suggestion of Mr. Henry Pease. First, the South Durham and Lancashire Union Railway was amalgamated with the original Stockton and Darlington line ; and the year following (1863), the Stockton and Darlington itself, together with its various tributary lines, was absorbed into the North-Eastern system.

No sooner had the South Durham and Lancashire Union Railway been completed than Mr. Henry Pease was planning further extensions of road for the iron horse. A line for connecting the new railway at Kirkby Stephen with the Lancaster and Carlisle Railway, near Clifton, was projected ; and shortly afterwards another extension, from Clifton to Penrith, was started. In both these undertakings Henry Pease was a leading spirit.

Up to this time Henry Pease had employed his

energies for the most part in enterprises intended to assist the industrial progress of the country generally, and of his native county in particular ; but he now took in hand a somewhat different project—the creation of a new watering-place for the people of the north. Attracted by the striking beauty of a sheltered fishing-village, and whilom retreat of smugglers, called Saltburn, he conceived the idea of converting it into a pleasure resort, and, when once he had satisfied himself of the feasibility of the project, lost no time in perfecting it. The first thing was to make a railway to the place. Application was made to Parliament by the directors of the Stockton and Darlington line for power of extension to Saltburn ; and in 1858 the scheme was proceeded with, and before long there arose on the site of the old fishing-village a picturesque town, with spacious hotels, substantial terraces and streets and a handsome railway terminus. The foundation-stone of the first cottages was laid by Henry Pease, who fittingly designated them the Alpha Cottages. Since then Saltburn has extended its borders greatly, and has become one of the best-frequented watering-places in the

north of England. Hither flock, in the summer-time, the denizens of Stockton, Middlesbrough, Darlington, and other northern centres of industry, and Saltburn remains a lasting tribute to the memory of its founder. It is worth while observing that the Peases have been unusually fortunate in the creation of new places and in the originating of new undertakings. It was Edward Pease who was the founder of the first railway; it was Joseph Pease who founded the town of Middlesbrough; and it was Henry Pease who founded the town of Saltburn; and between them they may be said to have made the town of Darlington. The York and Darlington Railway was another project in which Henry Pease took a leading part; and when, in 1875, the great Railway Jubilee was held, his name was the most prominent of all, he being the president on that occasion. Eighty British and thirty foreign railways were represented at that eventful gathering; and when Henry Pease arose in the midst of the vast assembly, and lifted his voice in praise of the great work which the world had seen achieved through the instrumentality of railways, it was felt that no one could have

more worthily filled the presidential chair. He was the only person left of the men who fifty years before had taken part in the opening of the first railway. As has been well said, "Many envied, but none could share, the pardonable exultation of 'the old man eloquent,' who after the lapse of half a century surveyed the marvellous results which had flowed from the enterprise and foresight of the railway pioneers."

Henry Pease, however, did not limit his busy life to the promotion of railway undertakings ; he was interested in many other concerns of a commercial nature, and seems to have been successful in all that he did. He was senior partner in the firm of Joseph Pease & Partners, coal-owners. In several other important companies, public and private, he likewise held a leading position. He was chairman of the South Durham Ironworks Company, of the Stockton and Middlesbrough Waterworks Company, and of the Weardale and Shildon Waterworks Company. Indeed, Henry Pease may be said to have identified himself with almost every branch of industry and every undertaking of magnitude in South Durham ; and in addition to these multifarious

engagements, he found time to serve his county in Parliament for several years, being one of the representatives of South Durham from 1857 to 1865. It would have been marvellous if a man with so many claims upon the constituency had not been returned. He was introduced to the electors by his brother, Mr. Joseph Pease, who delivered himself of these memorable words : “Are you farmers? so are we. Are you manufacturers? so are we. Are you miners? so are we. Are you shipowners and traders? so are we. Have you a single right, have you a single interest, have you any claim upon good-nature and common sense to which we are not accessible, and upon which we are not one with you in heart and soul and body?” This was no mere electioneering claptrap ; it was the honest truth. The Peases were identified with the people in every possible way, and feelings of gratitude alone, quite apart from any political sentiment, would have sufficed to secure Henry Pease a seat. From 1832 down to the present time, excepting the sixteen years’ interval between the retirement of Joseph Pease and the election of Henry Pease, South Durham has been repre-

sented by some member of this distinguished family. As a politician Henry won respect, if not distinction. Lord Brougham said of him that "a more respectable or a more useful member, I will venture to say, the House of Commons does not possess." Like the rest of his family, he was a zealous supporter of the doctrines of the Peace Society ; and it was in the interest of peace that, in 1853, in company with Joseph Sturge and Robert Charlton, he made that remarkable journey to Russia, as a deputation from the Society of Friends, to urge upon the Czar Nicholas the duty of sparing Europe from the miseries and devastation of war. It was a bold undertaking on the part of three Quaker gentlemen to travel to St. Petersburg to confront so imperious a monarch as Nicholas, and attempt to dissuade him from appealing to the force of arms ; but their simple earnestness touched the heart of the Czar : he not only received them kindly, but assured them he was ready to hold out his hand to his enemies in the true Christian spirit. This well-meant mission, however, failed in its purpose ; matters had proceeded too far in the direction of hostilities

to permit of any peaceful settlement being effected. Hardly had the three Quakers passed the Russian frontier on their homeward journey when the war broke out. The temper of the English people at that time was opposed to any interference in the interests of peace, consequently the Peace Deputation was regarded in this country with no little disfavour. It is only when looked at in the calmer light of historical distance that the efforts of the deputation can be appreciated in their true significance. Henry Pease and his two friends were little affected by the sneers of the unthinking ; they had set themselves what they considered a high and holy duty to perform, and had performed it. In a lecture he delivered at Darlington after his return home, Henry Pease said "he could not see anything unreasonable or deserving of ridicule in the fact of a body of Christians, who had been in existence two hundred years, and who had averaged 20,000 in number—who had always cherished the belief that liberty could neither be advanced nor national disputes settled by the use of the sword, and who had always endeavoured to be good citizens—send-

ing two or three of their number to endeavour to bring about a pacific settlement of the then present difficulty. Was there anything unreasonable, he would ask, in their endeavouring to serve their country by trying to avert the national evil that threatened it. In 1867 Henry Pease formed one of another Peace Deputation—sent out this time under the auspices of the Peace Society—whose object was to prevail upon Napoleon III. to organise a Peace Congress in Paris during the period of the Exhibition. Like the Emperor Nicholas, Napoleon received the men of peace kindly, and vouchsafed them certain promises on which they built their hopes, until in the end the proposed congress was declined. On the death of his brother Joseph, in 1872, Henry Pease was elected to the office of president of the Peace Society, and in 1878, when an International Peace Congress at Paris became an accomplished event, he was one of the principal English speakers.

Before the incorporation of Darlington, Henry Pease was chairman of the Local Board of Health, and was the first mayor of the town. He died on May 30th, 1881, at his temporary

residence in London. During his long and useful life he had earned for himself a high place in the esteem of his fellow-countrymen.

Since the death of Henry Pease, the business affairs of the Peases have been in the hands of Sir Joseph Whitwell Pease, M.P. for South Durham, Mr. Arthur Pease, M.P. for Whitby, sons of the late Joseph Pease, Mr. Henry Fell Pease, son of Henry Pease, and Mr. David Dale. Sir Joseph Whitwell Pease was born in 1828, and, after being privately educated, was introduced to that commercial sphere wherein he has since, along with his partners, maintained the eminence of the family name. When he attained his majority in 1849, the Cleveland district was experiencing its first flush of prosperity, and so much of this was due to the Peases, and the Peases themselves felt so much gratitude for the good fortune that had rewarded their enterprise, that the occasion was made the most of in the way of rejoicings. Young Joseph Whitwell Pease, indeed, found the way paved for him by his predecessors; when he entered upon business he started from a strong vantage-point; but it is not too much to say that he has not allowed the prestige of the

name he bears to be dimmed ; he has sustained the family reputation for integrity, perseverance, foresight, and success, and, as the head of a great industrial firm, has worthily borne his part in the commercial battle of the last quarter of a century. At the large gathering at the birthday banquet given in honour of the attainment of his majority, his father asked the people "to unite with him in humble desires—in prayers—that his son might fulfil his duties, by the help of God, as a true Christian and true patriot ; that his ear might never be deaf to the complaint of the poor or the tale of woe ; that he might be willing, to the best of his powers, to discharge his duties in the sight of God and of his fellow-creatures ; and that he would bring all things and lay them upon the altar of Him that gave them, remembering that they all must look for the only lasting inheritance beyond the grave." That the simple words then uttered were not lost upon the son for whose benefit they were spoken has been over and over again manifested by the good deeds with which that son's name has been linked since that time. In the railway work which engaged his family's attention so largely

in the days of his early manhood, Joseph Whitwell Pease played a prominent and honourable part, and in all that he undertook displayed a tact and an intelligence which sensibly assisted the important undertakings they had in hand. When in his thirtieth year he was the principal witness heard in support of the Stockton and Darlington North Riding Lines Bill, a fact which says much for the extent of his knowledge of railway matters and the requirements of the locality. He is now a leading director of the North Eastern Railway. When, in 1865, his uncle, Mr. Henry Pease, retired from the representation of South Durham, Joseph Whitwell Pease was elected in his stead, being returned at the head of the poll. In 1868, in 1874, and again at the last general election, the constituency continued him in the representation, and during his now somewhat lengthy parliamentary career he has more than fulfilled the expectations of his party. In commercial questions he takes an active part, and as a social reformer is in the front rank of prominent workers. His efforts in the cause of education have often received recognition, while his advocacy of the anti-opium demands

approaches enthusiasm. He does not possess any special gift of eloquence, but he can speak sensibly and pointedly on the subjects which most enlist his sympathies, and has on many occasions rendered effective service to movements of philanthropic purport or commercial advancement. He has manfully faced the duties and responsibilities of his position, and has commanded the respect of men of all parties and creeds.

On him has fallen the mantle of his uncle Henry. When Henry died, the great family was deprived of its chief, but the position, by right of seniority, experience, and interest, was soon adequately filled by Sir Joseph Whitwell Pease. An active publicist previous to this event, he now became if possible even more prominent. Hardly a cause having for its object the bettering of the nation, or the improvement of the condition of the people amongst whom he lives, but is supported by Sir Joseph. His name figures on the subscription list of every philanthropic and religious movement—for the church or the village chapel, the United Kingdom Alliance or the local Band of Hope, the pack of fox-hounds or the village cricket-club—while seldom a

meeting takes place on Teeside of any importance that he does not attend. Thus worthily carrying on the work of his predecessors, and sustaining the family name and dignity; he also continues the association of that name with a busy community which, like that of Middlesbrough, Saltburn, Darlington, and a host of smaller places, may be said to owe much of its success to the judicious support of the Peases. Both Joseph Pease and Henry Pease were presidents of the Peace Society, and Sir Joseph Whitwell Pease is the present president. That Sir Joseph's political labours have not been of a merely ornamental character is evidenced by the high estimation in which he is held by his party, and the possibility of his occupying an official position in future Liberal administrations is frequently discussed. Some years ago, it was understood, he had a baronetcy offered to him but declined the honour as being opposed to the traditions of the religious community to which he belonged. But recent years have witnessed many deviations from the practices of Fox, amongst "the people called Quakers," and Sir Joseph Whitwell Pease, as well as others of the family, has never

thought it necessary to conform with rigid exactitude to the more austere notions of that body; so when in the early part of the present year (1883), a further offer of a baronetcy was made by Mr. Gladstone to the head of the Pease family, the offer was accepted, and now, in Sir Joseph Whitwell Pease, we have the first Quaker baronet, the first titled Friend, as his father before him had been the first Quaker Member of Parliament.

Mention must also be made of Mr. Edward Pease, the second son of Mr. Joseph Pease and brother of Sir Joseph Whitwell Pease. This bearer of the name of the founder of the family's commercial greatness had the misfortune to possess a delicate constitution, which prevented him taking his place by the side of his brother in the more arduous undertakings of the firm. His earliest commercial experience was obtained at the woollen mills belonging to the family, and, later on, he took some part in the general management of the business of the Pease Brothers; but the "fever and the fret" of daily toil were too much for his physical power, and he passed his days in works of charity and goodness,

winning his place in the hearts of the people by the generosity of his character and the constant solicitude he evinced for the moral elevation of the masses. He was an ardent admirer of horticulture in all its forms, and the Gardeners' Institute at Darlington and the model fruit-farms established under his guidance at Bewdley afford testimony of his practical help in such matters. The cause of art and of education had a sincere friend in him also, he being one of the chief promoters and supporters of the Darlington Mechanics' Institute, the British and Foreign Training College for Female Teachers at Darlington, and the Darlington Grammar School, of both which institutions he was a governor. He died at Lucerne in June, 1880, in his forty-sixth year, and his remains were transferred to Darlington, where he was buried with every token of public affection. He left a bequest of 10,000*l.* for the education of the poor of Darlington, half of which sum is being spent on a Free Library.

There is still another prominent member of the Pease family to be spoken of—Mr. Arthur Pease, M.P. for Whitby. Mr. Arthur Pease is

brother to Sir Joseph Whitwell Pease, and a few years his junior. He was born at Darlington in 1837, and is the fourth son of Mr. Joseph Pease. He has at all times identified himself closely with the town of his birth, being a member of the chief local bodies and institutions, and in many ways exerted himself to raise Darlington in importance and influence. Since the date of the town's incorporation Arthur Pease has been a member of the Town Council of the borough, and in 1873 served the office of mayor with distinction. He has since been an alderman of the corporate body, and as vice-chairman of the Board of Guardians of the Darlington Union, and as governor of the Darlington Grammar School, his help has been that of an earnest, high-minded, and zealous co-worker.

Few men devote themselves more completely to the cause of morality, temperance, and philanthropy than Mr. Arthur Pease. He is a preacher in the Society of Friends, and very frequently occupies himself in that capacity, not confining himself solely to the Meeting House but occasionally appearing in the pulpit at other dissenting places of worship. As a

member of Parliament he has not yet developed any special gifts, except those of assiduity and attention. He is, however, considered by many to be the most effective speaker in the family at the present time. He takes great interest in the British and Foreign Training College, of which he is a prominent Governor.

Mr. Henry Fell Pease, the eldest son of Henry Pease, is also held in high regard not only by the inhabitants of his native district but also by that section of politicians who may be best described as official Liberals. A man of great wealth (for he was practically the sole heir of his father), he is one of those large-hearted representatives of the aristocracy of riches who provoke no envy and inspire no leveller's denunciation. When it was discovered that no provision had been made by his father for the children of a marriage subsequent to the date of the will, Mr. Henry Fell Pease nobly set to work to remedy the evidently unintentional omission. In the firm which, under the style of Messrs. Pease & Partners, has been concentrated all the branches of trade engaged in by the family, he has the special management

of the cloth manufactory. These mills never "run short time," and the extent of their operations necessitates agencies in Bradford, Glasgow, London, and other places. It has been Mr. Henry Fell Pease's pleasure to travel much, and in a modest form, for private circulation or to local audiences, he has frequently given his impressions of the countries he has visited. For many years he has taken an active part in the local government of Darlington. He is a conscientious representative of the rate-payers, and now fills the position of Alderman. In 1875, the Jubilee year of the railway system, he was mayor of Darlington, and in that capacity did the honours of the day when the great celebration took place. At the general election of 1880 his name was mentioned as a candidate for Darlington, though he did not come forward, and since then, after considering many offers, he has definitely decided to accept the hearty invitation of the Liberals of Richmond to contest the borough in their interest. At the last general meeting of the National Liberal Federation, he was elected president in succession to Mr. Chamberlain, M.P. He is a moderate

Radical in politics, and is looked upon as a solid, reliable member of his party.

It is very remarkable that for several generations in succession the name of Pease should have retained such preëminence in the industrial world of the north. Contrary to the general experience, great commercial ability and integrity, combined with a strong gift of foresight and an indomitable enterprise, have been hereditary in the Peases, and as the country has progressed since the dawn of the era of railways, the Peases have always been in the van. As has previously been narrated, the vast enterprises of the Pease family have been separated into many interests. In an article published in a clever serial work entitled "The Kings of British Commerce," these various undertakings are thus referred to : "There are several firms of the Peases, each with its own domain, but all practically lying in the same hands. First of all there is the firm of Joseph Pease & Partners. coal-owners. J. W. Pease & Co. deal in ironstone and limestone. The banking business is carried on under the style of J. & J. W. Pease. The extensive woollen mills are carried on under the style of Henry Pease & Co. The head-quarters

of these firms is in Northgate, Darlington. Their two most important undertakings are the iron-stone mines in Cleveland and the coal-mines in South Durham. It was not till 1850 that Messrs. Bolckow & Vaughan, who were encouraged in the enterprise by the sage counsels and substantial support of the late Joseph Pease, began to supply their blast furnaces with ore from the Cleveland hills, and thereby laid the foundations of one of the most flourishing of modern industries. The whole of the gigantic edifice of the Cleveland iron trade has been reared within the last thirty years. Prior to 1850 "Cleveland bays" were better known than "Cleveland pig;" but now that more than two million tons of metal are melted from the produce of the Cleveland mines in a single year, the Cleveland horse is completely overshadowed by the Cleveland iron. In the development of this important industry the Messrs. Pease have at all stages taken a leading part. The first royalty taken in their name was dated in March, 1852, and from that time to this they have stood in the forefront of Cleveland mine-owners. The first mine which they opened was at Hutton, near Guisborough. Its total output in 1853—its first

working year—was 6,646 tons. The output rapidly increased. In 1857 no less than 314,789 tons were brought to bank. After this the production gradually fell off, and the mine was closed in 1866. Long before that time, however, the operations of the firm in Cleveland had assumed imposing dimensions. In 1857, when the Hutton mine was at its best, the Messrs. Pease acquired the Upleatham mines from the Derwent Iron Company. In that year their output was 58,000 tons. Under the vigorous management of the Messrs. Pease the output was multiplied tenfold in a dozen years. So rich is the seam, and so extensive the royalty leased at Upleatham, that 20,000 tons per week may be taken from the workings for thirty years before the mine is exhausted. The royalty covers 6,000 acres, and the mines are said to be the largest in the kingdom. Near to Upleatham were the Hobhill mines, opened in 1864, which for several years yielded 1,000 tons of ironstone per day. The most extensive mines worked by the Messrs. Pease after those at Upleatham are situate at Skinningrove, so close to the sea-shore that a sea-wall 160 yards long had to be constructed to prevent the waves

at high-tide encroaching upon the village. The royalties extend over 5,000 acres, and the output exceeds 5,000 tons per day. The other mines belonging to the firm in Cleveland are Craggs Hall, Lingdale, and Tocketts. The total output of the ironstone mines of the Peases in 1873 was 1,281,324 tons of iron. 2,350 men and boys were employed in these mines three years ago, earning annually 180,000*l.* in wages."

Since the foregoing was written, however, all the businesses in which the Peases were concerned have been thrown into one gigantic undertaking, and are now carried on by a limited liability company under the style of Messrs. Pease & Partners.

Contemporaneously with these great openings up of minerals and the bringing to the locality of many thousand workpeople, villages and towns had to be built; and Messrs. Pease at New Marske, Skinningrove, Skelton, and other places erected hundreds of comfortable cottages, laid out streets, and put up buildings of public utility commensurate with the demands. Seventy-five miles of tramway were in use in connection with the Skinningrove, Hobhill, and Upleatham mines;

and in the same mines two hundred tons of gunpowder were used yearly for blasting purposes.

Then there are the coal-mines held by the Peases. We have already mentioned the coal enterprises entered upon by the late Joseph Pease, and marked the impetus which he gave to the development of the South Durham coal industries. At the present time Messrs. Pease own and work the following collieries: the Adelaide and St. Helens collieries, near Bishop Auckland; the Tindale, Sunnyside, Pease's West, Bowden Close, Stanley, Wooley, and Brandon collieries, near Crook; the Esh and Waterhouses collieries near Durham; and the Windlestone colliery, near Ferryhill. The total yield of these numerous mines is not less than 1,350,000 tons per annum, about thirty per cent of which is used for conversion into coke for smelting purposes, the remainder being used for trade and domestic requirements. The authority previously quoted says: "The late Mr. Joseph Pease was one of the first to recognise the importance of coke to the iron trade. He built coke ovens on a scale hitherto unprecedented in the north. He was thus enabled to reap the advantages of the enormous demand occasioned by the rapid de-

velopment of the iron districts of Cleveland and Barrow. The Messrs. Pease have always been amongst the first coke-burners in the north. They are now turning out over 625,000 tons of coke per annum out of more than 2,000 ovens. In connection with the collieries and coke ovens are the fire-brick works, at Pease's West, which give employment to a large number of men. Altogether at collieries, coke ovens, and fire-brick works, they employ 4,000 men and boys, and pay 275,000*l.* a year in wages alone.

The business in which the earlier Peases made wealth—the woollen manufacture—has been continued, in spite of the many other departments of industry which the various members of the family have taken up from time to time, and has been worked with steady success, if not with an extension of operations proportionate to the progress the Peases have made in the iron and coal trades. There are, for all that, three mills in Darlington still belonging to the firm, and over seven hundred people are employed at them.

At Frosterley and Broadwood, in Weardale, the Peases have extensive limestone quarries, produc-

ing 300,000 tons of the mineral per annum. And at Darlington the banking business founded by Mr. Joseph Pease in the early railway days, when he acted as treasurer to the Stockton and Darlington Railway Company, has been kept on, although no attempt has been made to extend the operations of the bank beyond assuming a sort of treasurship for a number of firms in the district.

In the industrial history of the century the Peases have a foremost position.

THE FISONS AND FORSTERS OF BURLEY-
IN-WHARFEDALE.

THE FISONS AND FORSTERS OF BURLEY-IN-WHARFEDALE.

N the banks of the winding Wharfe, midway between the quaint old world town of Otley, and the moorland steep upon which nestles the village of Ilkley, stands Burley-in-Wharfedale. It is one of the last places in the world where you would expect to find the evidences of a great industry, all its surroundings being of a strictly rural character, while its landscape setting is one of extreme beauty. Removed from the great centres of commercial activity, and resting on the borderland of that region of pastoral seclusion and sylvan grandeur where the monks of Bolton performed their religious offices and lived their lives of repose in the olden time, Burley seems altogether "off the line" and out of the range of the work-a-day world. Tourists and pleasure-seekers going northward frequently touch it, and

invalids who make their way to the various hydropathic palaces which lie in and around Ilkley are familiar with it; but, despite a thriving population of some two thousand souls, and the presence of a large manufacturing concern on the outskirts of the village, the place has hardly been able to work itself into general recognition. All through the summer time holiday-makers pass over its limestone road on their way to or from the abbey and woods of Bolton, and halt at one or other of its ancient inns, for when the weather is fine the summer stream of conveyances from Leeds, Bradford, and other West Riding towns is active and continuous. The railway, moreover, runs across the higher side of the village, and travellers by this speedier route will note the name of the station if they do not see much of the village itself.

The Wharfe has been preserved from trade contamination almost as much as any stream that could be mentioned. It is to day much in the same condition as when Turner made it his favourite summer resort, living for months together at Farnley Hall, the residence of his friend Walter Fawkes, and thence making excurs-

sions up and down the stream, transferring to his sketch-book those charming bits of Wharfedale scenery which afterwards were wrought up into pictures that brought the artist both fame and profit. A large portion of these works were left by Turner with his host, and the Farnley Turners are now the most precious heir-looms of the family, and constitute a shrine at which all lovers of English art are proud to worship. Farnley Hall, which is short of three miles distant from Burley, is a picturesque old mansion, and has been for centuries in the possession of the family which numbers amongst its ancestors that grand old villain the hero of the Gunpowder Plot. Alluding to this Wharfedale scenery and its effect upon Turner, Mr. Ruskin writes, in his *Modern Painters*: “The scenery whose influence I can trace most definitely throughout his works, varied as they are, is that of Yorkshire; and its rounded hills, far winding rivers, and broken limestone scars seem to have formed a type in his mind to which he sought, so far as might be obtained, some correspondent imagery in other landscapes. He had his attention early directed to those horizontal beds of rock which usually form the face of the

precipices in the Yorkshire dales, projecting or mouldering away in definite succession of ledges, cornices, and steps.” Wharfedale has, indeed, been for generations dear to the heart of poet, painter, and angler. The poet Gray makes mention of Wharfedale in his exquisite letters. He says, “Whordale, so they call the vale of Wharfe, and a beautiful vale it is, as well wooded, cultivated, and well inhabited, but with high crags that border the green country on either hand; through the midst of it, deep, clear, full to the brink, of no inconsiderable depth, runs in long windings the river.” The classical name of the stream, according to inscriptions which have been found of the dates of Severns and Caracalla, is sometimes used for the river genius. This is the Latinised form of the “Guerf,” or Wharfe of the Saxons.

The entire district for miles round Burley is of a most picturesque configuration. From the banks of the river the ground rises to a considerable height; on the right side by a gradual sweep of verdant indulation, and on the left by bold, sudden, and rugged breaks until the brown outline of Rombalds Moor, with its fringe of jutting rock, merges in the sky-line. These

heights, as well as the rich valley which they enclose, are dotted with many fine mansions and residences, the newness of the edifices built by the worsted lords of Bradford and the cloth lords of Leeds, contrasting not altogether unpleasantly with the immemorial halls of the county gentry of which Wharfedale owns so many. But by far the most imposing buildings in Wharfedale are the castellated hydropathic institutions, which stand in sturdy grandeur, like the old baronial mansions of Scotland, on the hill side above Ilkley. The entire valley seems to be dedicated to rest, and pleasure, and health. It is the favourite retreat for the over-worked Yorkshire business man; here he feels he can have "health, and quiet breathing;" here the smoke of the factory, the din of the workshop, and the press of gain cannot pursue him. Yet, in the midst of these happy surroundings, in the heart of this peaceful valley, lies the industrial colony of Greenholme, an appendage of Burley, where, since May, 1850, the firm of Wm. Fison & Co. have carried on a flourishing worsted manufacturing concern. The works at Greenholme, however, have not, strange to say,

polluted the landscape; for they lie hidden away from the general route of travel, and do not betray their presence by those unwelcome outpourings of smoke which commonly render factories but too prominent objects of the landscape, for when the water-power, which is the great *motif* of the mills, is insufficient for the working of the machinery, the smoke generated by the production of substituted steam-power is consumed by a patent process, and not permitted to spread itself in blighting clouds over the fields and gardens around. Thus the purest conditions upon which a factory can be worked are attained, and the workers have for their hours of relaxation all the advantages of sweet air and lovely scenery.

For more than a hundred years there has been a mill at Greenholme. The name was derived from the Green family, who owned the property at one time, but the mill was started as a cotton factory originally, and continued to be used as such down to the period when Mr. Fison and Mr. W. E. Forster came thither in 1850 from Bradford. Then the cotton manufacture had to give way to the worsted busi-

ness, and in that line the Greenholme works have ever since remained, under many extensions and developments, until now the old cotton mill has passed out of existence, and on and around its site have been erected a range of mill buildings, which, if not exactly imposing in comparison with some of the great industrial piles which rear their heads in other places, are still spacious and commanding, and have, at all events, had the best sanitary skill bestowed upon their construction. The original cotton mill existed down to a comparatively recent period, and was superseded by what was called the "new mill," which stood on the site of the present one, and was only pulled down in 1872. The aspect of the place to-day is neat and cleanly, the many-windowed pile being as untainted by smoke and grime as any of the cottages of the villagers, or as the mansions of the leading partners of the firm—Mr. William Fison and the Right Hon. W. E. Forster—which stand, each enclosed in its own grounds, within a stone's throw of the factory, side by side almost, abutting upon the river. The pathway from the village, past the mill, and down to

the water side, is bordered by high hedgerows, and the scene altogether is one of great pictur-esque ness, the foaming rush of water over the broad damstones above the mill adding greatly to the charm of the view. The water-wheel of Messrs. Fison & Co.'s manufactory is supposed to be the most powerful in the whole county of York. It is thirty feet in diameter, eighteen feet abreast, and is of about 300 horse-power. There is also a large turbine wheel driven by water, as well as a steam-engine, each being of 200 horse-power. The number of operatives engaged at the works is about 700. Internally, the mill presents much the same scene as other factories in which the worsted manufacture is carried on, the processes are essentially similar, and "the hands" themselves are of the stereotyped pattern, with this addition, perhaps, that they have more of the hue of the country upon them than is usual with factory-workers.

The village of Burley lies mainly by the roadside, getting as near to the public highway as it conveniently can. All its buildings are of stone, and include a handsome church, and a public hall of goodly proportions. The latter

was built by Messrs. Fison & Co., and is not only well supplied with periodicals, but has a respectable library. It contains a lecture-hall capable of holding six hundred people, and here, during the winter evenings, the Burleyites assemble at entertainments and lectures which a committee provide.

A sort of paternal care is exercised over the inhabitants by the firm, Mr. William Fison being almost looked up to as the "father of the village." He is regarded as the chief arbitrator in all matters of difficulty that crop up in Burley, and is, perhaps, as often engaged in patching up private misunderstandings, as in directing affairs of a more public nature. A kinship seems to extend through the whole community.

It will be an interesting task to trace the history of a successful representative firm like this, from the obscurity of its small beginnings, to its present eminence.

Mr. William Fison belongs to a Norfolk family, and settled in Bradford towards the end of the third decade of the present century. His first partnership was with Mr. William Leather, at Leeming's Mill, Bradford, but in 1842 he arranged

a partnership with Mr. W. E. Forster, and in that year they began as worsted manufacturers at the Waterloo Mill, Bradford, and such success attended their undertaking, that in the following year they also took Leeming's Mill. In 1847 they had an additional factory at Holmfield; but in 1848 they occupied what was known as Fison's Shed, and in 1849 the Foundry Mill. In this way they altered, added and moved, until in 1850 they bought Greenholme, relinquished all their mills in Bradford, and gathered together all their operatives and machinery in one large concern on the banks of the Wharfe. From that time to this the business has been extended and developed, and the firm have found it necessary, occasionally, to rent other mills in favourable localities. They occupied the Junction Mills, Shipley, from 1867 to 1881, the Worth Valley Mills, Keighley, from 1870 to 1880, and since 1880 have held the Castle Mill, Idle.

Mr. W. E. Forster, whose connection with this firm adds so much lustre to it, descends from an ancestry of singular note. His father was in every sense one of the best men of the day. He was the great itinerating Quaker missionary, his

life and character forming a very near approximation to that of John Wesley. In any order of life his great energy and ability would have enabled him to set his mark upon the world. Quakerism, as a religious society, is dying out ; but not before it has done a great work and has entered a noble protest against the vices of society. Forster, the Quaker preacher, like Wesley, travelled all over England, Wales, Scotland, Ireland, and made repeated visits to America. He also carried on his evangelistic labours on the Continent. He became intimately acquainted with the Gurney family, near Norwich, and married one of their connections, Anne, the sister of Sir Thomas Fowell Buxton. They were married in Tenth Month, 1816. This alliance with the great Quaker family of East Anglia had a vast effect upon young Forster's business fortunes, and has greatly shaped and coloured his political career.

In the course of his wanderings the good Quaker preacher and missionary came to Bradford. The town was far from being unknown in the annals of the Society of Friends. In the time of Charles II. there were great numbers here who suffered considerably. There was one

man especially, named Wynn, who had been a clothier, and become soldier, and then, going over to the doctrines of George Fox, stoutly refused to fight. He was a Quaker minister for thirty-six years. So there was a sacred Quaker tradition to be maintained at Bradford, and which Forster maintained most stoutly. He made many visits to Yorkshire, holding meetings in barns, houses, and wherever he could find an audience. Years after, one Sarah Hustler gave an account of a meeting she attended at Bradford. "The meeting was large; most of the clergy and the ministers of the Gospel of the district were present. After an unusually solemn silence, William Forster rose. A deep impression was evidently made upon those present. Years afterwards the meeting was spoken of by persons of different denominations as a very impressive one. 'That man's preaching goes to the very root of the matter and to the very hearts of his hearers.' " The young minister's wife—he began his ministerial career before he was twenty—the mother of the future statesman, had not been brought up a Quakeress. She

had spent a good deal of time at Weymouth, then a fashionable watering-place, and had attracted the kindly personal notices of George III. during his residence there. A good wife, she became ardently attached to her husband's work. He describes to his friend, Sarah Hustler, the little house at Bradpole, Dorsetshire, where his only son was born: "Our cottage is a plain-built stone house, thatched roof, and casement windows; one end comes to the footpath alongside the road. In front we have a neat forecourt, at the back a small orchard, and at the other end I hope to make a good garden. There are two parlours; one of them a neat, snug room, not very large; the other, I think, may be improved and made very habitable. There is a small light room for a store closet and a comfortable kitchen. There are four lodging-rooms on the second floor—I think of converting one of them into a sitting-room—and we have also good garrets. The only objection is the distance of a mile and a half from meeting." In 1827, he removed to the neighbourhood of Norwich, between the city and Earlham. At Norwich

his son would become familiar with those manufacturing processes which had their first beginning there long before they were transferred to the West Riding of Yorkshire.

William Edward Forster was sent to the celebrated Quaker school at Edmonton. The worthy Quakers, seeing that so many of their young men, when they went up to Oxford and Cambridge, lost their sectarianism, devised a college of their own, that they might be able to dispense with the English Universities. The school only numbered about twenty-six, and it has sent eleven members to Parliament. William Edward Forster, we are assured by one of the most distinguished of his tutors, made great and equal progress, both in mathematical and classical studies, and especially, though still a youth, advanced to the highest mathematical studies. It was the intention of the wise Quakers that their sons should have the advantage of a collegiate course, and complete it in such good time that, when still young, they might enter on a business career. This, we may mention, is the design with which the latest of Cambridge colleges, Caven-

dish College, has been established. The Quakers have the merit of being very true to each, and promoting each other's business plans. Mr. Forster made his first acquaintance with manufacturing life with Mr. Pease at Darlington.

In the life of Mr. Forster, the preaching Quaker, we find several references to his son. When he alludes to his birthday, he writes, "The Lord bless, preserve and prosper him!" We hear of him spending some time with his son near Bradford. In his last illness he mentions him: "Of course you will be sure that William and Jane should hear all that is to be heard about me, if it can be so. Dearest child, I know how tender he would have been; but I do not know that I could have wished him to witness my sufferings and my weakness (1854)." He was buried in the graveyard near the Friends' Meeting House at Friendsville, Blount County, Tennessee—"a bright sunny spot, surrounded by trees, rural and picturesque, gently sloping to the south." At one interesting period, the political career of the son and the evangelistic career of the father run in the same groove. In the great Irish famine of 1848, father and son

made a tour of charity and investigation, as, indeed, did other good and great men at the same time. Such a field would be a good training-ground for political observation, and, indeed, Ireland must always form a distinct province of every statesman's study.

During that period of his business life preceding his entry upon a parliamentary career, Mr. Forster devoted himself diligently to the study of political and social subjects, and in all public matters connected with the district in which he lived evinced a lively interest. In October, 1848, he delivered three lectures in Bradford, on "Pauperism and its Proposed Remedies," and his timely and able treatment of the subject was much discussed. In the November of the same year he was put forward as a candidate for the office of Town Councillor, but so little was his future greatness foreseen that he was rejected in favour of a local nonentity. He never afterwards sought to attain municipal honours, but plodded manfully on, content to bide his time, though probably never dreaming of becoming a distinguished ornament of the British House of Commons. In all local political conflicts, how-

ever, he was in the forefront, and did good service in helping forward the cause which he had at heart. At the general election of 1847 he seconded the nomination of Colonel (afterwards General) Thompson, the well-known free-trade champion, for the representation of Bradford, in a speech of considerable power. In 1852, when there was another general election, Mr. Forster again came forward as the supporter of his friend Colonel Thompson, this time acting as his proposer. The Colonel lost the election by two votes. How earnestly Mr. Forster worked for the success of his party at these elections is characteristically evidenced by a story which is related of him. At one election, when votes were especially valuable, and when the Liberal committee were told that the enemy had captured some waverers and held them interned in a certain public-house, where they were lavishly primed with drink, he suddenly disappeared from the committee-room, "went for" the hostelry alluded to, and, not being able to get in by the door, leapt clean through the window, made his way to the recalcitrant voters, and prevailed upon them to accom-

pany him to the polling-booth to vote for the Liberal candidate.

In 1861 Mr. Forster's own turn came. In that year Mr. (afterwards Sir) Titus Salt resigned his seat for Bradford, and Mr. Forster was elected to succeed him, without opposition. From that time he has continued to sit for Bradford, and has won for himself a distinguished name as a statesman. He unsuccessfully contested Leeds in April, 1859. Mr. Forster soon attracted notice in the House of Commons, not so much by any great gift of oratory, as by his strong personal power and solid intellectual force. He showed a good aptitude for debate, and took up a leading position almost from the beginning, a speech from him being always looked for when any important discussion occurred. Before long he made his way into official rank, since which time he has held a place in every Liberal government we have had. It was as Vice-President of the Council that he made his most distinctive mark, his Education Act having entirely revolutionised our educational system, and elevated the character of the nation.

The Ballot Act was another measure with

which his name will be always associated. In piloting these two Bills through the House of Commons he displayed a remarkable amount of tact, patience, and persistence, and won the respect of all parties. When Mr. Gladstone succeeded to power in 1880, Mr. Forster was induced to accept the most difficult and thankless post at the Premier's disposal—that of Chief Secretary for Ireland. How resolutely and bravely he set himself to bring about a reign of peace in that unhappy country, how his utmost efforts failed to produce the desired effect, how he ultimately broke from his colleagues on a point of policy upon which he differed from them, and how his successor, Lord Frederick Cavendish, met his death at the hand of the assassin, are events of too recent occurrence to require more particular mention. What Mr. Forster's political future will be can only be conjectured. Not long ago he was regarded as a possible Premier; now he occupies a position of prominent isolation. The whirligig of time, however, brings many great and many sudden changes in the world political, and when the cards of office have again to be shuffled by the Liberal party it is more than

probable he will find his way to the Treasury benches, and, it is to be hoped, under more favourable circumstances than when last he sat there.

Mr. Forster lives at Wharfeside, a Gothic mansion, with an abundance of gables and wings. It is situated within sound of the looms and spindles of Greenholme, while from its rooms are audible the waters of the Wharfe. It may here be interesting, perhaps, to quote a little word-picture which the writer of this article contributed not long ago to the pages of the *World*. It was said, in describing this "celebrity at home," Wharfeside "was originally built for Mr. Forster, the stone being procured from the neighbouring moorland quarries. The grounds around are well laid out and prettily wooded, but are of no very great extent. Approaching by the broad carriage-drive, the visitor enters the house under a substantial porchway, and soon finds himself in the presence of numerous busts, portraits, and relics of the Forster, Buxton, and Arnold families. The place wears a cheerful, comfortable aspect, and a Quaker-like simplicity seems to pervade the atmosphere. In a little

room, whose windows look out towards Rombalds Moor, many interesting objects are contained—portraits of Mr. Förster's father, of Dr. Arnold, of Sir Thomas Fowell Buxton, of the poet Wordsworth, of Mr. Forster himself, and another of his adopted son. It is in the roomy, excellently-lighted library, looking on to the river, that Mr. Forster spends most of his domestic hours. Here he will receive his visitor, and in his own cheery manner lead the conversation through the ways of politics or trade. It is here that he is at home to his local political friends and discusses the political outlook; and it is here that he will read with quick, eager appreciation the thoughts and opinions of the day as they are reflected in the leading journals and magazines, which are plentifully strewn around him. To hear him chat with his guests on men and things and books is to become impressed by the remarkable activity and versatility of his mind. Brusque but gentle, outspoken but cautious, by no means elaborately or artificially graceful of attitude, but impressive by his earnestness, Mr. Forster possesses an inexhaustible fund of bodily and mental energy.

At home or abroad, in the House of Commons or in the factory, he is for ever busy. To the world at large, Mr. Forster is simply a statesman and politician; to the local world—the Burley and Bradford world—he is also a man of business, a supporter of local institutions, a corrector of local grievances, and a hard-working citizen. Wherever he may be, he knows from week to week exactly how the Greenholme factory is going on, what sales and purchases have been made, what prices have altered, and what is the precise condition of the partnership business. Mr. Forster will talk of wools and yarns and stuffs and alpacas and mohairs with as great readiness at Burley and Bradford as he will talk in London of party tactics and national movements. While at home, the duties he imposes upon himself are of the most varied description. One day he is bearding the members of the Burley Local Board in their den, impressing on them the necessity for improved sanitary regulations; another day he is addressing his constituents in St. George's Hall, Bradford, on imperial matters; a third day, he is in Bradford, speaking on the movement

for the relief of the distressed ; a fourth day, he is defending Free-trade at a meeting of the Bradford Chamber of Commerce against the advocates of Reciprocity ; a fifth day will find him acquainting an assemblage of Rechabites with his views on the temperance question. Mr. Forster has always been a worker and a striver."

Mr. Forster has always exercised a powerful influence in the district in which his business lot has been cast. Years ago, when as yet the State had not recognised the existence of educational responsibilities, Mr. Forster was plodding earnestly on in this quiet corner of Yorkshire on behalf of the education of the people, and the school that he was mainly instrumental in founding at Burley is now a thriving and in all respects excellent institution. "Mr. Forster's time at Wharfeside is neither wanting in enjoyment nor in occupation. His correspondence is extensive, comprising a regular succession of communications from eminent politicians and humble constituents. Aided by the pen of a young lady, who is at once his secretary, amanuensis, and interpreter, Mr. Forster rapidly and promptly replies to such letters as demand

an answer. Then comes the active business of politics or commerce. Nor, incessantly employed though he be, does Mr. Forster forget the duties of hospitality, and Wharfeside is seldom without its honoured guests. Sometimes these may be persons distinguished in literature or art, sometimes old political friends, and sometimes Wharfedale neighbours. Tact and sincerity are combined in Mr. Forster to such an extent that he is able to number amongst his personal intimates representatives of all creeds and opinions. He is honoured for his personal qualities no less than for his work, and those who visit him at his cosy and picturesque retreat on the banks of the Wharfe, and see him ‘in his habit as he lives,’ will carry away with them an agreeable reminiscence of a vigorous and striking personality.”

Mr. Forster has for many years been liberated from active business duties, his senior partner having all along assumed the direction of the works at Greenholme. Mr. Fison, who is a gentleman of strong Conservative views, was a candidate for the representation of the Northern Division of the West Riding, but was defeated. Though almost at opposite extremes of the poli-

tical compass, the two have for forty years been the most steadfast of friends. Mr. Forster paid a well-deserved tribute to Mr. Fison, on the occasion of the marriage of Mr. Fison's eldest son in September, 1872. He said, "It is now about thirty years since Mr. Fison and I met as young men—I might almost say as boys—and joined together in the matter of starting in business. It is a very intimate relation this relation of two partners. It is a relation which tries the temper and the feelings of the persons so associated, and you may depend upon it, if a man has any serious faults, or faults at all, his partner is the most likely person in the world to find them out. I do not mean to say that both of us are faultless, but I can say this, I believe that in the thirty years during which I and Mr. Fison have been together we have not only never had a quarrel, but there has never been any serious difference between us. Never, during the whole of that period, have we had one moment's occasion to regret that we were partners. In good times and in bad times—and we have had both—I have always experienced a feeling of gladness that Mr. Fison was

by my side to help and assist me, and most frankly do I acknowledge that if I have had any prosperity in this world it is owing to him. I should indeed be ungrateful if I did not acknowledge it. And I have another remark to make. Of late it has been my lot to have duties to perform that have taken me away from the work devolving upon me as a member of the firm, and I am glad to have the opportunity of expressing publicly my gratitude to my partner."

With Mr. Fison and Mr. Forster have been associated four partners. Mr. Edward Hudson was a partner from the year 1856 to 1862; Mr. Walter Nicholson from 1864 to 1877; while since 1872 Mr. Frederic William Fison (Mr. William Fison's eldest son), and since 1873, Mr. Edward Penrose Arnold-Forster (Mr. Forster's adopted son) have been actively engaged as members of the firm. Mr. E. P. Arnold-Forster is the eldest son of the late W. D. Arnold, who was the fourth son of Dr. Arnold of Rugby. Mr. W. D. Arnold was at first in the army, but subsequently became Director of Public Instruction in the Punjab, being the first

Director of that Department. He and his wife having both died—the latter in India, the former at Gibraltar—the four children left by them were adopted by Mr. and Mrs. W. E. Forster in 1859. In 1879 these children added the name of Forster to that of Arnold. The junior members of the firm of Fison & Co. both take an active interest in the affairs of the district, and in connection with the administration of justice and the fulfilment of other local official duties they employ themselves diligently and successfully.

It should be added that Mr. Forster has been peculiarly happy in his marriage. His wife is the eldest daughter of Dr. Arnold, and she has proved herself worthy of her eminent father. Mr. and Mrs. Forster have not had any children. Fox Ghyll, a pleasant house close to Fox How, and country home of the great schoolmaster, when he could escape from the flatness of Rugby to the mountains, is sometimes occupied by Mr. Forster, and for a few weeks in the early autumn the statesman frequently finds there a welcome retreat from the cares of politics and business.

The firm of William Fison & Co. have in their forty years of active business life witnessed many fluctuations in the staple trade in which they have been engaged, and have, with others, experienced the ebbs and flows of success, but they have never deviated from the purpose with which they started—that of studying the social well-being of their workpeople in conjunction with their business connection—and through all the long partnership there has existed between employers and employed a bond of sympathy and a feeling of mutuality which have rendered their relations very gratifying. Many of the firm's servants have grown old in their service. One instance of long service is, indeed, worth particularly alluding to—Mr. William Hargreaves, the cashier, has been with them since 1843. Few firms present a record as smooth and peaceful as that of William Fison & Co., while perhaps not another in all the worsted district owns a connection so distinguished as that which this firm possesses in numbering amongst its partners a statesman so eminent as the late Chief Secretary for Ireland.

THE FIELDENS OF TODMORDEN.

THE FIELDENS OF TODMORDEN.

N the picturesque borderland of Yorkshire and Lancashire, at the foot of the Blackstone Edge range of hills, lies the thriving town of Todmorden, which, since the latter part of the last century, has been notably identified with, and has grown in proportion with, the fortunes of the Fielden family. It was in the County Palatine that the cotton manufacture of England was cradled; and Todmorden, which is partly in that county, assisted largely in its development, thanks to the energy, enterprise, and ability of the Fieldens. This family had long been creditably known in the district. They could trace an unbroken descent from a Fielden who lived in the time of James I., one Nicholas Fielden, who held a farm at Inchfield in Walsden, under a deed dated 1612. Nicholas was described as a yeoman, and yeomen the

Fieldens continued to be from that period down to the concluding years of the eighteenth century. The family had always lived on the hills round about Todmorden, employing themselves in the farming of land and the manufacturing of woollen cloth. In this way, the Joshua Fielden who may be regarded as the founder of the fortunes of the later generations of Fieldens employed himself. His farmhouse was situated on the heights above Todmorden, and was known as Edge End, which may be taken as in some measure descriptive of its position. Here Joshua Fielden farmed his bit of land—which would not be of the most fertile kind—and here he kept his two or three hand-looms, at which he and the members of his family worked at such times as they were not needed in the field. It was a quiet uneventful sort of life, its main relief being afforded by the periodical journeys which Joshua had to make to Halifax market, with his cloth on his back. For years he trudged this distance on foot, over a rugged road, thinking little of the twenty-four miles of ground his feet had to cover in those expeditions; for men were hardy in that

day, and inured to physical exertion. There would be one or two houses of call by the wayside, where he would halt for a rest and a chat; but the one bright spot to him in these passings to and fro was a farmhouse called Rodwell End, in the township of Stansfield. This farm was kept by James Greenwood, whose daughter Jenny had set the heart of the young farmer-clothier aflame with love. Next to the selling of his pieces, her smile was the one thing that he looked for on these journeys; and it is only fair to presume, from what subsequently happened, that Jenny had an equal regard for him. At all events, they were married, and for several years they plodded carefully and lovingly on at Edge End, and the farming and the cloth-weaving prospered fairly well.

So matters continued until somewhere about the year 1782, when Joshua Fielden was suddenly fired with a new ambition. A fresh era of industry was dawning. The great cotton-spinning inventions of Hargreaves and Arkwright had begun to make their impress on the trade which they had been designed to help; and the steam-engine was gradually being

brought into use as a motive-power. Crompton was just on the eve of perfecting his mule, and the industrial world altogether was in the throes of transformation. It was then that Joshua Fielden, with the pioneer's instinct, resolved to relinquish the dual occupations of farmer and cloth-maker for that of cotton-spinner; and, with that view, he removed himself and his household belongings from Edge End to a quiet little place called Lane Side, down in the Vale of Todmorden. It is said that his wife Jenny was greatly depressed at the thought of having to leave her home amongst the hills, where she had been so happy, and often remarked that it would have given her far greater pleasure to move higher up than to go lower down, where she would miss the healthy moorland breezes and the far-stretching prospect. But sentimentalism has never been an overwhelming influence amongst the race of commercial explorers; and Joshua Fielden was not the man to turn back from a great business idea for the mere sake of indulging a love of place. So to Lane Side they went, and entered into the occupation of three two-storied cottages, with little gardens

in front, bordering the highway. Of one of these cottages, they made their living place; of the other two they made working places. Those three cottages, heightened by an additional story, still remain to mark the starting-point of the great industrial career which followed.

At first they confined themselves to the hand-spinning of cotton, and managed to keep in constant employment, which was considered a clever thing to do with Joshua Fielden's large family of five sons and four daughters. But there was wonderful unanimity of purpose amongst them; as the country people had it, "they all pulled one way." The sons were Samuel, Joshua, John, James, and Thomas, all of whom were imported into the business as they got old enough to take part in it. As time went on, and their operations extended, it became necessary for them to have larger premises; but, with the cautiousness which has always been a characteristic of the Fieldens, they did not do it by unmanageable strides. To begin with, they simply added a story to the three cottages; then, after a few more years, when they decided to avail themselves of steam

power, they erected a stone mill of five stories, seven windows in length, adjoining the cottages; and by this time they were fairly embarked in the cotton-manufacture, and began to count for something in the commercial world. Each of the sons was allotted to a special department, and the father exercised a general superintendence over the whole. Joshua (the son) was the mechanic; James had the direction of the spinning and weaving; Thomas went to take charge of a warehouse which they established in Manchester; and John was the master spirit who saw to the buying of the cotton and the selling of the manufactured goods. It is related that when John was only nineteen years of age, he was in the habit of walking with his father to the Manchester market every Tuesday—a distance of forty miles there and back. They left home about four o'clock in the morning; transacted their business in Manchester, personally delivering all the goods they sold; and then they would walk back to Todmorden, arriving there about midnight of the same day. No task was too difficult for them, no hours too long, no sacrifice too great, so long as they were help-

ing forward their business enterprise. John Fielden has left it on record that, from the age of ten, or little more, he had been actively employed in the work of his father's mill.

In 1811, Joshua Fielding, the father, died, and a few years after his death the name of the firm was changed from that of "Joshua Fielding & Sons" to Fielden Brothers. Samuel Fielding died in 1822, leaving the concern in the hands of Joshua, John, James, and Thomas Fielden, by whom such success was eventually obtained that they became prominent among the cotton lords of the North. Year by year they widened their sphere of operation, adding mill to mill, until that vast pile of buildings known as Waterside grew to its present magnitude. When cotton-spinning had first been started by them in the old cottages, it was by means of the spinning-jenny, and the carding was done by hand ; then came the carding by machinery ; and the throstle and the mule ; the produce of these being woven into cloth by the hand-loom, until that in its turn was superseded by the power-loom. At the beginning the motive-power was a water-wheel, then one very small steam-engine, then a larger one, and eventually

one of fifty horse-power, which gave the propelling force to the various operations.

About the year 1829, the firm erected a large weaving-shed, which covered an acre of ground, and had one continuous roof supported solely by pillars. This shed held over eight hundred looms, which were turned by an engine of sixty horse-power. At the time of its erection this was the largest shed in the world, and attracted much attention. But even then, vast as the extensions had been, and closely as they had followed each other, the firm had by no means touched the limit of enlargement. More spinning-mills continued to be built, and a second and larger weaving-shed was ultimately put up, capable of holding one thousand looms. Two more large steam-engines were erected, of sixty horse-power each, working together with one fly-wheel. Meanwhile, Todmorden was growing in extent and importance, a large population finding its way to the place as operatives for Fielden Brothers. The elder Joshua Fielding had found it but a small hamlet; he himself caused it to grow to the dimensions of a respectable village, and his sons and grandsons developed it into a town. No

matter how the cotton trade fared generally, or how other places suffered from times of depression, the Fieldens of Todmorden kept their heads up through all.

Up to the year 1844, the various erections comprising the Waterside Works had been confined to the east side of the turnpike road; but about that time the buildings were extended to the western side, and a vast range of warehouses was ultimately built along the side of the Lancashire and Yorkshire Railway, into which a siding was run from the main line: and here the firm unloaded the cotton they had bought in Liverpool, and loaded the goods which were to be sold in the Manchester market, or shipped at Liverpool in bales to the various markets of India, China, the Brazils, the West Coast of South America, and other ports with which Fielden Brothers had direct dealings through their correspondence.

In addition to the mills at Waterside, individual members of the firm bought at various times smaller mills in the valleys which run out of the main Todmorden valley up into the moorland hills that surround it. These were all spinning-

mills, and were, in the first instance, worked by water-power, aided afterwards by the steam-engine. The cotton was taken to them from the parent mill at Waterside, and brought back there in the shape of yarn to be woven into cloth.

At first the consumption of cotton by the Fieldens was very small. When Joshua Fielden, the father, was in the first years of his cotton-spinning experience, the weekly consumption did not average more than such a quantity as could be brought from Manchester in a one-horse cart; for in those days there was not even a canal in that region for the conveyance of goods. But as time wore on, as the means of forwarding goods were multiplied, as the general cotton trade enormously increased in extent, and as the name of Fielding Brothers got to be honoured with a world-wide recognition, the consumption of the raw material at Waterside grew amazingly. In 1846 the consumption of the firm was some four hundred bales (of five hundred pounds each) per week, that being, at that time, probably the largest consumption of cotton of any firm in the world.

About the year 1830, Messrs. Fielding Brothers

erected a gas-works to light their works at Water-side. This was the first gas-works established by any private firm, and caused much sensation in the district. The gas-mains were soon extended through what was then the village of Todmorden ; and the inhabitants had thus the advantage of this novel and convenient light long before many of the large towns. In 1845 the Todmorden Gas Company was established ; but Fielden Brothers continued to be dangerous rivals up to the time that the company obtained an Act of Parliament many years afterwards ; and when this was done, a clause was inserted in the Company's Act protecting the rights and privileges of the firm by whom gas had first been introduced into Todmorden, so far as the firm's works and mains then existed, but without any of the restrictions as to price and quality which were imposed upon the company. At the present time the firm supply a considerable portion of the town of Todmorden, with gas, and although the price they charge is high—viz. 5s. 6d. per 1,000 cubic feet—their gas is eagerly sought after, it having the illuminating power of twenty-four candles.

This is only one illustration out of many which

might be adduced in proof of the sterling way in which Fielding Brothers have carried out their own undertakings, and at the same time benefited the community whose interests are inseparable from their own. Whatever the cost has been, everything with which they have had to do has had to be of the best. In the time of the Civil War in the United States, when the price of cotton was so high, and the strain upon employers and employed was so severe, it grew to be the practice to make goods that were very heavily sized; but Fielding Brothers set themselves against this from the first, and continued to make what was called "honest cloth," until their stock of manufactured goods had accumulated to such an extent that the holding of them would have been a serious embarrassment to any firm but one of vast wealth like that of the Fieldens. But it was no use to go on "kicking against the pricks;" the rage for low-priced articles, irrespective of intrinsic value, had set in with a force that could not be successfully overcome, and in the end Fielding Brothers had reluctantly to follow the new fashion, or cease to manufacture altogether. The latter course they would undoubtedly have

adopted, but they felt they could not desert the workpeople who had helped them to build up their prosperity. During the continuation of the cotton famine the Fieldens found it necessary to close their works for a period of nine months, but they did not leave their two thousand operatives to shift for themselves, or throw themselves upon the Relief Committee; they allowed them to come once a week to the mill to clean the machinery, and paid them half their customary wages. In addition to this they set large numbers of men to work at reclaiming waste land, for the mere sake of keeping them in occupation. Sewing schools were established for the women, and, one way and another, the Fieldings contrived to tide their industrial colony over this terrible time without allowing them to be any particular drain upon the charitable funds which were then raised for the relief of the distressed in the cotton districts.

Looking back again for a few years, we find that in 1837 the firm of Fielden Brothers made a noticeable extension of its trading connection. In that year the firm of Fielden Brothers & Co., merchants, of Liverpool, and W. C. Pickersgill &

Co., of New York, was established, and two "outsiders" became partners in this firm, which soon obtained a world-wide reputation. Mr. W. C. Pickersgill became managing partner of the New York house, and Mr. Daniel Campbell occupied the same position in Liverpool. It was to the untiring energy and ability of the former, and to his rigid adherence to the verbal instructions, "Never make a bad debt, William," given him by Mr. John Fielden as he was starting for New York, that a large part of the prosperity of the firm is due. At one time, Mr. Pickersgill in New York, in consultation with the Barings, the Browns, and the Rothschilds, settled the rate of exchange by every mail.

From that day to this the prosperity of the firm has been continuous. Joshua, John, James and Thomas Fielden carried on an unbroken partnership until 1847, in which year the elder brother, Joshua, died. Two years later John died, and James died in 1852. There was now only one of the original Fielden Brothers left, Thomas Fielden, and he and the three sons of John Fielden formed the firm from 1852 to 1869, in which latter year Thomas Fielden died, leaving Samuel, John, and

Joshua Fielden, John Fielden's three sons, sole proprietors of the business. Thomas Fielden, who from 1812 to the day of his death, December 7th, 1869, resided near Manchester, and was the head of the firm there and in Liverpool, although a keen politician, did not take an active part in public affairs. He was a shrewd, far-seeing man of business, highly and deservedly respected for his upright conduct in all the affairs of life. The success of the firm was undoubtedly largely due to his industry, perseverance, and ability.

Samuel, John, and Joshua Fielden, the three sons of John Fielden, continued in partnership together until 1879, when Joshua retired in consequence of the serious condition of his health. The firm is still Fielden Brothers, and Samuel and John Fielden constitute its proprietary.

It is now desirable that we should make more special reference to the individual efforts of the Fieldens. Although so deeply and so successfully engaged in mercantile pursuits, the Fieldens were no indifferent spectators of public affairs, but were indeed keen politicians. The founder of the firm, old Joshua Fielden, in spite of being a Quaker, was a staunch Tory. His sons, on the other hand,

were Radicals, and followers of William Cobbett. The father used to say that his five sons were “as arrant Jacobins as any in the kingdom.”

John Fielden, the third son, however, was destined to fill the most important position before the public. To begin with, he took an active interest in all local affairs, and, at the age of seventeen, was a Sunday-school teacher amongst the Methodists. He very soon became dissatisfied with their theological views, and eventually joined the Unitarians, whose doctrines were gradually extending into these remote hill districts. In 1824, he, along with his co-religionists, erected a Unitarian chapel in Todmorden, which he attended, with the members of his family, to the day of his death. The Sunday school, of which he was for many years superintendent, in connection with this chapel was at that time considered the best in the neighbourhood.

The Fieldens, as may be supposed, were earnest and active supporters of the Reform Bill of 1832, and in that year Mr. John Fielden was returned as the colleague of Mr. Cobbett, to represent the newly enfranchised borough of Oldham in the House of Commons.

John Fielden was a man of large heart and broad sympathies, and his exertions on behalf of the poor and oppressed gained him a foremost name amongst the philanthropists of his time. He opposed with all the energy of his strong character the passing of the Poor Law Amendment Act of 1834, for he knew from practical experience, having been an overseer of the poor in 1817, how hardly it would press upon the unfortunate deserving poor. So strong and powerful was the opposition of the Fieldens to the building of a union workhouse as a test of destitution, that it was not until 1874, forty years after the passing of the New Poor Law, that a union workhouse was erected at Todmorden.

The labours of Mr. John Fielden on behalf of the factory-workers will always be held in grateful remembrance. So far back as 1816 he had begun to take an active part in promoting the agitation which afterwards ripened into a general crusade against the oppression to which women and children were subjected in the factories of the North. When he entered Parliament it was with a firm resolve to leave no stone unturned to obtain an amelioration of the condition of the

unprotected factory workers; and when Richard Oastler, the Factory King, as he was subsequently called, and Nathaniel Gould, of Manchester, threw themselves heart and soul into the Ten Hours Bill agitation, they found nowhere a firmer adherent or a more powerful advocate than John Fielden.

The keynote of the agitation had been struck by Richard Oastler in his memorable letter to the editor of the *Leeds Mercury*, dated September 29th, 1830—a letter which went through the length and breadth of the land like a mighty cry of anguish, and stirred the hearts of men with feelings of the deepest indignation. A more powerful appeal to humanity and justice was probably never penned. “Let truth speak out,” he wrote, “appalling as the statement may appear. The fact is true, thousands of our fellow-creatures and fellow-subjects, both male and female, the miserable inhabitants of a Yorkshire town” (Yorkshire was represented in Parliament by the giant of anti-slavery principles), “are this very moment existing in a state of slavery more horrid than are the victims of that hellish system, *colonial slavery*. These innocent creatures drawl out, unpitied, their short but miserable existence

in a place famed for its profession of religious zeal, whose inhabitants are ever foremost in *professing* ‘temperance’ and ‘reformation,’ and are striving to outrun their neighbours in missionary exertions, and would fain send the Bible to the farthest corner of the globe; ay, in the very place where the anti-slavery fever rages most furiously, her *apparent charity* is not more admired on earth than her *real cruelty* is abhorred in heaven. The very streets which receive the droppings of an ‘Anti-Slavery Society’ are every morning wet by the tears of innocent victims at the accursed shrine of avarice, who are *compelled*, not by the cart-whip of the negro slave-driver, but by the dread of the equally appalling thong or strap of the overseer, to hasten, half-dressed, *but not half-fed*, to those magazines of British infantile slavery—*the worsted-mills in the town and neighbourhood of Bradford!* Thousands of little children, both male and female, *but principally female*, from seven to fourteen years of age, are daily *compelled* to *labour* from six o’clock in the morning to seven in the evening, with only—Britons, blush while you read it!—*with only thirty minutes allowed for eating and recreation.*

Poor infants! ye are indeed sacrificed at the shrine of avarice, *without even the solace of the negro slave*; ye are no more than he is *free agents*; ye are compelled to work as long as the *necessity* of your needy parents may require, or the cold-blooded avarice of your worse than barbarian masters *may demand!*"

There was much more in the same highly-pitched strain; but the circumstances demanded something strong and emphatic, and the letter nobly answered its end. It awakened a sense of horror in the minds of the public, and from that time the Ten Hours movement received shape and force, and was carried forward with untiring energy, zeal, and ability by Oastler, Gould, Fielden, Bull, and others. Referring to the part which John Fielden took in this great agitation, a writer who, in 1857, under the signature of "Alfred," published an account of "the factory movement," says: "Mr. Fielden's principles of economical and commercial policy were the results of his own experience formulated into a system; that experience enabled him to construct authentic tables of that branch of manufacture with which he was connected; from

details he ascended to principles, and was in consequence of sincere convictions, a strenuous advocate for shortening the hours of labour in factories, a measure alike favourable, in his judgment, to the interests of the employers and the employed. Mr. Fielden contended that a reduction of the working hours was an indispensable condition of the future success of the cotton trade." By speech and by writing, by unremitting advocacy within the walls of the House of Commons, and on the platform in the country, he championed the cause of the over-worked factory operatives. Through the columns of the newspaper press he frequently urged his views with telling power, and his work, entitled the *The Curse of the Factory System*, put the question before the public in perhaps a clearer light than it had previously been seen in ; for to the earnestness of the advocate he added the calmness and lucidity of a mind that favoured, more than all, strict justice and impartiality. " Honest John Fielden, the Radical member for Oldham," was the common descriptive phrase when he was referred to, and " honest John Fielden," he continued to the end of his days. At every

stage of the movement Mr. Fielden was in the forefront: at the great meeting in London on February 23rd, 1833, when the Earl of Shaftesbury (then Lord Ashley) made his first public speech in support of the cause; in helping forward the immense petitions in favour of the original Ten Hours Bills, proposed in the House of Commons by Mr. Sadler; in supporting the Royal Commission of Inquiry; and, at last, in taking charge of the Ten Hours Bill himself, and persistently bringing it forward until, on March 17th, 1847, it passed the third reading in the Commons by a large majority, and subsequently, on June 1st in the same year, passed its last stage in the Lords, and received the Royal Assent on the 8th of that month. Mr. Fielden did not long survive the final success of his great parliamentary achievement, but died in 1849, universally regretted.

The three sons of John Fielden—Samuel, John, and Joshua Fielden—upon whom, since the death of their uncle Thomas, the direction of the business of the firm of Fielden Brothers has devolved during the last thirty years, have, in every respect, been equal to the fulfilment

of the eminent and responsible positions to which they succeeded.

Mr. Samuel Fielden, the elder brother, resides at Centre Vale, Todmorden ; he is a justice of the peace for Yorkshire and Lancashire, and a director of the Lancashire and Yorkshire Railway Company.

Mr. John Fielden is also a magistrate for Yorkshire and Lancashire, and has occupied the post of Chairman of the Todmorden Local Board of Health since its formation. He has recently built at his own expense a coffee tavern and club-room on a large scale, and of much architectural beauty, for the use of the people of Todmorden. His interest in local affairs has always been very great, and the town has much cause to remember the many useful local undertakings with which he has identified himself. His favourite residence is a large castellated mansion called Dobroyd Castle, which he has erected close to Edge End, the homestead of his grandfather, Joshua Fielden. Dobroyd Castle overlooks the town and valley of Todmorden, and forms the most prominent feature of the hilly landscape in that region, being a familiar

object to travellers by the Lancashire and Yorkshire Railway. In this mansion Mr. John Fielden has gathered together many valuable treasures of art, some of his examples of sculpture being amongst the finest that have been produced in modern times, while the internal decoration of the building itself is marked by an elegance of design and an illustrative purpose which are seldom found except in the specially-built mansions of the more successful of our painters. Particularly noticeable are the sculptured friezes of the large hall, upon which have been skilfully and faithfully depicted the successive operations in connection with the manufacture of the cotton-fibre. Mr. John Fielden is also the possessor of Grimston Park, once the country seat of Lord Londesborough, and here the Todmorden "cotton-lord" is accustomed to enjoy the hunting season, and pass from time to time a well-earned respite from his labours at Waterside. Mr. John Fielden bought Grimston Park in 1872 from Lord Londesborough's trustees.

A more prominent part in public affairs has been taken by Mr. Joshua Fielden, the youngest of the three sons of the late member for Oldham.

He was educated privately in England and Switzerland; and at the age of sixteen was taken into the works, where he was employed for the most part in managing the affairs of the office. Early in life he was brought much into contact with public men and affairs, and, acting as private secretary to his father during the memorable Ten Hours Bill agitation, received an excellent training for a public career. With the Fieldens, however, business has always held the first consideration, and it was not until Joshua Fielden had served the firm in which he was a partner with the best years of his manhood and the full limit of his ability—not until he had made himself an ample store of wealth—that he consented to turn aside from the paths of commerce and give himself up to the work of the nation. All the time he was at Waterside, however, he kept himself abreast with current events, and whenever a public question came to be agitated in Todmorden or the neighbourhood, his “soul was in arms,” and his presence on the platform was looked for and welcomed. In the time of the second factory agitation, when it was sought to increase the working hours of mill operatives

from fifty-eight to sixty hours per week, Mr. Joshua Fielden came prominently forward, and, in conjunction with his brothers, did all in his power to keep the law as his father had left it. But it was not to be ; their opponents carried the day. It was mainly through the efforts of Mr. Joshua Fielden that the building of the union workhouse was so long delayed in the Todmorden district. Until the year 1868 he did not make any attempt to influence public affairs except so far as he could do so in and from his native town. He felt so strongly, however, in regard to some questions of imperial policy that he was prompted to publish his opinions thereon occasionally, and his pamphlets and letters on the subject of the repeal of the malt-tax were characterised by an abundance of sound reasoning and a clearness of expression that gained for his advocacy a good deal of notice. In 1868 he was asked by the Conservative Party to contest the Eastern Division of the West Riding of Yorkshire. At the general election that year he was returned for that constituency along with Mr. Christopher Beckett-Dennison. In 1874 he was again elected for the Eastern Division by

tenfold the majority that he had on the previous occasion. He continued to sit until the general election of 1880, when, in consequence of impaired health, he was compelled to decline being again put in nomination. During the twelve years that Mr. Joshua Fielden sat in Parliament he obtained the confidence and respect of his constituents in a marked degree, and on many occasions distinguished himself in the House of Commons by the clear-headed manner in which he addressed himself to important public questions. Without setting up any claim to oratory, he possessed the art of marshalling facts effectively, and often won his way in argument where a more ornate speaker would have been lost. It is yet hoped, now that he has in a great measure recovered his health, that he will again find his way into Parliament, where, quite apart from party considerations, he is calculated to perform much useful work. Although in the main a firm adherent of the Conservative cause, he was never a mere party tool; but, having the true Fielden capacity and will to do and think for himself, was not always to be relied upon for answering the call of the party "whips." Away

from the field of politics Mr. Joshua Fielden has also considerable claim to notice, he having taken a lively interest and accomplished good work in the direction of historical and antiquarian research. He is a fellow of the Royal Geographical Society and of the Society of Antiquaries; and amongst the Unitarian body, to which he and his brothers belong, he holds a place of great prominence, having been President of the British and Foreign Unitarian Association.

Until the period of his entering Parliament Mr. Joshua Fielden resided at Stansfield Hall, Todmorden; but in 1870 he bought an estate, called Nutfield Priory, in the county of Surrey, which formerly belonged to Mr. H. E. Gurney, of the firm of Overend, Gurney & Co. Here he erected a beautiful mansion in the Tudor style, in which his artistic taste and his love of the old associations have been brought to bear with admirable effect. On the Gothic arch of the tower entrance there is a moulding, wrought in the form of a winding scroll, upon which is inscribed the motto: "There's a Divinity that shapes our ends, rough-hew them how we will." One of the most conspicuous features of the

interior is a large and commanding commemoration window, erected in the great hall. It is of stained glass, covering nearly the whole of the front portion of the lofty hall, and has been executed from designs by F. R. Pickersgill, R.A. This fine work of art illustrates the history of cotton-spinning from the earliest period, with special reference to the social condition of the operatives and the effect of factory legislation thereupon. The four top lights represent “spinning with the spindle in the thirteenth century;” the next four lights illustrate “spinning with the wheel in the sixteenth century;” and the lower four lights give a view of “spinning by machinery in the nineteenth century.” In order to make this last scene historically correct, Mr. Pickersgill had the advantage of working from sketches of the machinery and dresses of the workpeople made in the Waterside Mills at Todmorden. All these three scenes are designed with wonderful vigour, the groupings being exceedingly effective, while the colouring is rich and striking, without being garish. Indeed, harmony of colour has been so admirably observed in the entire series of pictures, that

the eye is nowhere offended by wrong contrasts. In the side lights of this immense window are portraits of Mr. Fielden's father, and his three uncles, Joshua, James, and Thomas Fielden; while on scrolls here and there are inscribed the names of the more prominent workers in the Ten Hours movement—Fielden, Oastler, Bull, Gould, Wood, Walker, Sadler, and Peel. The wretched condition of the women and children in the cotton factories, before the Ten Hours Bill came into operation, is effectively contrasted in these pictures with the aspect of health and contentment which marks the later era, when legislation has been invoked in their aid. The accessories of the pictures have also had much care bestowed upon them, and are very appropriate, including, in addition to a rich display of the white and red roses of Yorkshire and Lancashire, emblematic of the fact that the Waterside works are in both counties, representations of the cotton-pod, the ram's head, and the silkworm, indicating the cotton, wool, and silk manufactures, in respect of which the Act restricting the hours of labour was first applied. A more notable instance of the employment

of stained glass in the decoration of a private mansion could probably not be given.

Mr. Joshua Fielden married, in 1851, Ellen, daughter of Mr. Thomas Brocklehurst, of the Fence, Macclesfield; and they have had a large family. His eldest son, Thomas, married, in 1878, the daughter of Mr. Thomas Knowles, M.P. for Wigan, and resides at Stockeld Park, Wetherby, Yorkshire.

The three gentlemen who now represent the Fielden family have, in combination, done much to enhance the social condition and promote the prosperity of their native town. In 1869 they erected there what is probably the finest Unitarian church in the kingdom. It is a Gothic building of exquisite proportions, having a beautiful spire one hundred and ninety-six feet in height, and containing, inside and out, much decoration of a chaste and costly character. In the interior various coloured marbles have been used with splendid effect, and the chancel window and the rose window over the principal entrance are triumphs of the stained-glass worker's art, the chancel window being especially beautiful, with its series of illustrations of the chief incidents in

the life of Christ. A peal of bells, a carillon, and a large organ are the musical features of this noble edifice, which was built at a cost of 36,000*l.* An inscription on the floor of the principal entrance records the fact that the church was erected by Samuel, John, and Joshua Fielden. Mr. John Gibson was the architect. Since its opening the three brothers have invested a sum of 7,500*l.*, in the names of trustees, to provide an annual sum for the services.

Besides this munificent gift, Messrs. Samuel, John, and Joshua Fielden have built, at a cost of 54,000*l.*, and presented to their native town, a town hall, as a memorial of their father and uncles. It is a handsome stone building in the classical style, and was erected from the designs of Mr. Gibson. It contains a large and handsome room for public meetings, a court-room in which the county justices sit, and an extensive series of offices for the transaction of the town business. The hall was opened on April 3rd, 1875, by Lord John Manners, then Postmaster-General, amidst much rejoicing, and at the same time a fine bronze statue of the late John Fielden, of which Mr. Foley was the sculptor, was unveiled, the

cost of the statue having been raised by the subscriptions of the factory-workers of England, Ireland, and Scotland.

It now only remains for us, after having thus referred to the individual achievements of the Fieldens, to attempt to give some idea of the industrial concern with which their names have for so long been honourably connected.

Waterside lies at the head of the Todmorden valley, and is hemmed in on either side by precipitous hills. A goodly stream rushes by within a short distance, providing an ample supply of water for the working of the engines.

It was in this situation that Joshua Fielden, the grandfather, made his first venture in the cotton manufacture, entering into it at a time when it was undergoing its most rapid development. Up to the time of Arkwright's inventions the cotton trade had not taken first rank amongst our national industries. A hundred years before, it was only just beginning to be recognised in this country. Italy and Spain were somewhat extensively engaged in the treatment of this fibre centuries before we took it up in England; and, going still further back, we find India and China

manipulating the product of the cotton-tree long previous to the advent of the Christian era. We have all heard the story of Semiramis having invented cotton-weaving; but the people of India claim even to have been in advance of the famous Assyrian queen. It is imagined by some that the expedition of Alexander the Great, 330 b.c., led to the first introduction of cotton goods from the land of the Ganges to Europe. One of the earliest allusions in print to the actual manufacture of cotton in England is contained in Lewis Robert's *The Treasure of Traffic*, published in 1641, in which he says, "The town of Manchester buys cotton-wool from London that coines from Cyprus and Smyrna, and works the same into fustians, vermilions, and dimities." But behind-hand as we had been in this industry up to the seventeenth and eighteenth centuries, when once the men of Lancashire had taken it up, they soon outdistanced all foreign rivals; and by the time that the firm of Fielden Brothers had worked its way to eminence and fortune, the general cotton trade of the country had expanded to such a marvellous degree that it became the leading textile industry in the world. As an indication of

this great development, it may be mentioned that the annual consumption of cotton in England between the years 1776 and 1780 fell short of seven millions of pounds, while a hundred years later there were not less than 1,175,345,000lb. weight of cotton used in the English cotton manufacture, from which 1,040,380,000lb. were spun into yarn, 211,940,000lb. going into export as yarn, 698,840,000lb. as woven stuffs, and 129,600,000lb. remained in the country for home consumption.

In this great industrial development, as we have seen, Fielden Brothers played a most important part, mill after mill being erected by them, and shed after shed, until the present gigantic concern was the ultimate result. Having been built in so many separate sections, as it were, and with no portion of the older factory buildings swept away, but all still standing as landmarks of commercial history, if not exactly ornaments of the landscape, the Waterside works are not to be compared in imposingness of aspect with many less extensive ranges of factory buildings of a later date. Taking them, however, in their

order, as they come, from the first stage to the last, we see each operation of the cotton manufacture being carried on under perfectly convenient conditions, with space enough for all the various processes. There are the Waterside spinning-mill, in which five hundred and sixty-two hands have been employed at one time; the old weaving-shed, containing five hundred looms; the new weaving-shed, with about one thousand looms; covering an acre of ground; and quite a number of smaller buildings, in which the earlier preparatory processes are carried on. Then, farther away amongst the hills, the firm have other works, including the Robinwood Mill about a mile and a half off, on the Burnley Road; Stoneswood Mill, on the way towards Bacup; and Lumbutts Mill and Jumb Mill, up in one of the hollows of the Blackstone Edge range. At Waterside alone they have three powerful steam-engines—one of one hundred and twenty, another of eighty, and a third of sixty horse-power. When in the full tide of their success, Fielden Brothers also occupied mills at Mytholmroyd, Smithy Holme, Waterstalls, Causeway, and

Dobroyd; but as time went on, and the members of the firm found their positions well assured, and as fresh inventions brought about a greater concentration of force, they relinquished some of the outside mills, and now confine their operations to Waterside, Robinwood, Stoneswood, Lumbutts, and Jumb.

A rapid glance through the Waterside works will give us some notion of the present nature and extent of the firm's operations. First, there is the mixing-room, where thousands of pounds worth of cotton lies piled up in bales just as it arrives from America, and where it is emptied out, looking so full of dirt and rubbish that to the untutored eye it seems as if no machinery in the world could ever make it soft and beautiful. Indeed in its earlier cleansing stages the fibre has some strange and fearful processes to go through. It is estimated that in ninety bales of cotton there are at least 300lbs. of sand, and no end of other impurities; and all this has to be shaken or blown out of it before it can be submitted to the more advanced manipulative operations. First of all it is passed through a long pipe, into which is introduced a powerful

current of air that plays havoc with the dust and dirt. Then we follow it into the scutching-room, where the cotton is put through what is called a scutcher, which has an iron cylinder studded with iron spikes that catch the fibre and toss it about in the most frantic manner ; while a beater, consisting of two iron blades working on an axis, makes violent attacks upon it, the machine making fifteen hundred turns per minute. We now descend to the opening-room, and see the openers at work, with their revolving vertical shafts and projecting discs and arms, and their active fans, and observe the cotton at length rolled upon a beam in the form of a "lap." At the next stage we require greater space for our operations. We reach the carding-room, where rows of carding-machines are to be seen at work, with their numberless rollers, wheels, and cylinders boxed off for the confinement of the dust ; but, do what they will, the dust lies thick in the air, and constitutes a small mist. The carding-machine is well worth examination. When the box-covering is lifted off, you see a number of rollers of different sizes, each bristling

full of teeth made of the finest wire, revolving one upon another, moving at various speeds, and stealing the fibrous material from each other in the most unaccountable way. It is as if they were manipulating a succession of snowflakes. These rollers are in the middle portion of the machine. At one end the beam of "lap" feeds the machine with fleecy layers of cotton and at the other it issues forth in the shape of a beautiful gossamer film that passes through a small circular opening, being taken from the final roller by an extremely fine horizontal comb that moves with great rapidity. In passing through the circular opening as "sliver," it drops into an oscillating can, which receives it most tenderly. When the "lap" enters the machine it moves with extreme slowness, as if reluctant to get drawn into the entanglement of the thousands of teeth that the rollers are anxious to grind it between; but when it has passed the last roller, and has become beautiful white "sliver," it hurries off sixty to eighty times as fast as when it entered. A layer of thick cotton one yard long put in at one end of this machine will come out at the other

end a layer of eighty or ninety yards in length.

The preparatory processes are now finished. What the remaining machines have to do is to stretch the fibre to perhaps a hundred times its original length, and to impart to it the proper amount of twist. The cotton in its "sliver" form is very unequal in its formation, and is far from being in a fit condition to go to the spinning frame. We therefore see the cans of "slivers" brought to the drawing-frames. Six ropes of "sliver" pass together between the rollers of the first drawing-frame, the rollers moving with unequal velocities, and producing, by their combined action, a nearly uniform result—the six ropes that enter forming one on emerging. Then six of these sixfold ropes of "sliver" are passed on to the second drawing and, after the same process has been repeated, the "slivers" are put through a third frame. each rope of "sliver" at the finish being thus two hundred and sixteen times its original strength. One yard has been expanded into thirty-seven yards, and, what is very important, all the fibres are now side by side. The slub-

bing-frame now takes the cotton in hand. Two ropes of "sliver" are run together between rollers, and the cotton is wound on to open bobbins, being still further drawn out in the process—one yard being stretched to five or six—while at the same time a slight extra twist is given to it. Then the roving frames have a turn at it, giving further attenuation and twist to the fibre, and making it ready for the spinning-frame. Many rooms have to be travelled through in inspecting all these processes, and much clatter and buzz has to be endured; but the work-people seem happy amongst it all, and go through their duties with an activity and a brightness which bespeak anything but oppression.

From this point there are two distinct roads for the fibre. Such portion of it as is intended for yarn (or warp) is carried forward into the throstle-room where there is a long array of throstle spinning-frames. The bright spindles of these machines run at the rate of four thousand revolutions per minute, and not only perform the winding and twisting processes, but give a further extension of its length by seven times. It is interesting to watch the working of the little

army of “doffers,” as they call the children who, when the bobbins are full, take them from the spindles with military order and precision. From the throstle the yarn is transferred to winding frames, where it is run on to larger bobbins; and then it goes to the warping machines, where the bobbins are placed in a rack, the ends threaded through large needles arranged in a frame, and then wound round a large circular revolving drum to the required length.

When the cotton-fibre is intended for weft it is taken from the roving-frames to the mule-spinning. This machine is the most interesting and impressive sight in a cotton-mill. It contains a moving carriage that works on an iron railroad, and runs in and out five or six feet at each journey. There are six hundred to eight hundred threads on each carriage or machine, and as the drawing, stretching, and twisting proceeds they are wound into the form of “cops,” and are ready for the loom.

We have now only to follow warp and weft into the large weaving sheds to see the cotton worked up into “pieces.” The two sheds previously mentioned—one containing a thousand

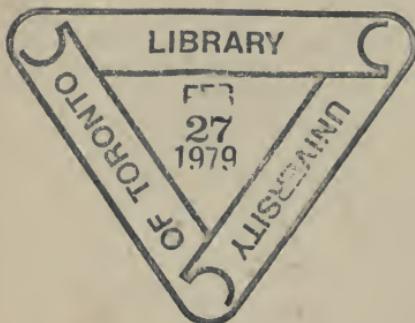
and the other five hundred looms—present a most animated appearance. The looms are rattling away at an enormous speed—many of them run at the rate of one hundred and ninety “picks” or strokes to the minute—and the operatives who tend them have to keep their eyes open and their hands ready for instant action as their machines drive rapidly along. Each weaver has four looms to look after, so there is not much time for loitering. The sight is a very impressive one—a far-stretching scene of bustle and din which to the stranger is almost bewildering.

Messrs. Fielden Brothers have always evinced a lively interest in the welfare of their workpeople, and there has always seemed to exist a feeling of friendliness and goodwill between them and their *employés*. Many of their hands have continued to work for them during a lifetime; they have at the present time men in their employment who have worked continuously at Waterside for over fifty years. Long after the adoption of power-looms, they kept their old hand-weavers with work. Indeed, they had fifty-three of these in their service so recently as 1861; but in that

year they relinquished the hand-weaving department entirely, not, however, without pensioning off thirty-five of them; and of this number two are still living and receiving their pensions, one being eighty-five years of age, the other seventy-two.

The firm which has built up so large and important a concern as that at Waterside, and has done so much to benefit the large community that it has, as it were, brought together, will not fail to be remembered as amongst the worthiest examples of industrial energy and success, as well as of high individual purpose, that the nineteenth century has witnessed.

END OF VOL. I.



OVE
THIS POCKET
LIBRARY

be

two.

The firm was important a considerable time ago, having done so much work that it has, at present, failed to be noticed. There are examples of its work of high quality.

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

HF
3504
F7
v.1

Fortunes made in business

